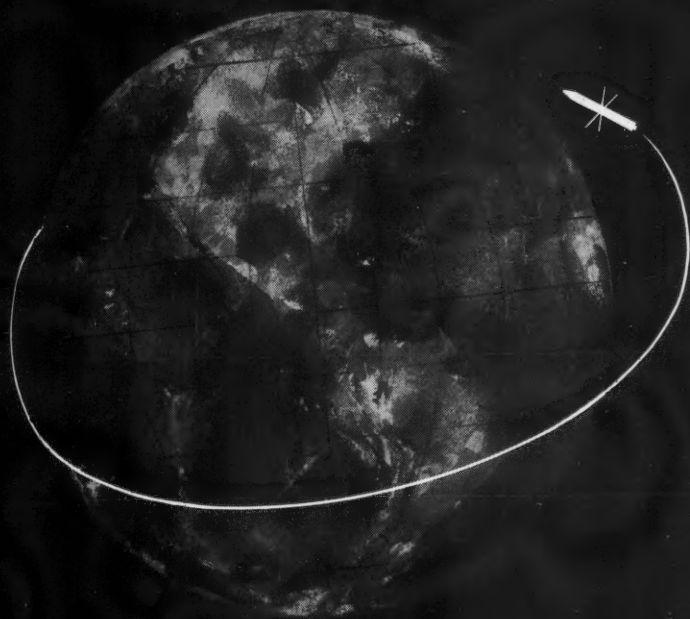


APRIL 1958

ARMY
INFORMATION
DIGEST

**U.S. ARMY
SATELLITE
IN ORBIT**



THE OFFICIAL U. S. ARMY MAGAZINE



ARMY INFORMATION DIGEST

THE OFFICIAL MAGAZINE of the DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.

THE DIGEST is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

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Use of funds for printing this publication has been approved by Director, Bureau of the Budget, 8 May 1957.

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THE TEAMWORK of countless scientists, engineers, technicians from the armed forces, industry and the academic world was written in the skies over Cape Canaveral 31 January. Thrust into orbit by the fiery surge of the Army's Jupiter-C missile, the Explorer satellite was launched toward the east so that the earth's rotation added, by a slingshot effect, to the velocity given the satellite by the rocket motors. Thus, science, teamed with the basic forces of nature, was able to accomplish an historic launching—an achievement of immediate application to IGY research, and of profound long-range significance to the progress of mankind.

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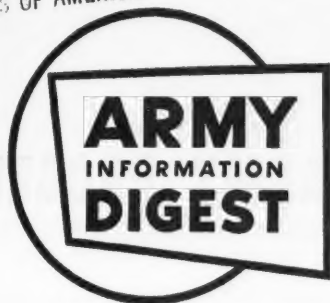
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NG & USAR: Same as Active Army except allowance is one copy to each unit.

For explanation of abbreviations used, see AR 320-50.



APRIL 1958

Volume 13 Number 4

IN THIS ISSUE

Army Explorer in Orbit	5
Vigil in the West by Maj. Gen. Edward J. McGaw	10
The Army's Role in the Military Assistance Program by Lt. Col. Albert D. Schutz	17
Breakthrough in Record-keeping by Ollon D. McCool	27
The Infantryman in the Atomic Age by Maj. Gen. Herbert B. Powell ..	32
Science Education Programs	40
The Army's Recurring Reports by Lt. Col. Charles M. Grimshaw	48
Army Nurse Corps Role in National Defense by Col. Inez Haynes	55

IN BRIEF

Army Trends	2	Air-transportable Equipment	26
Years of Development	7	Printed Circuit Transistors	31
Defense Chief	8	Staff College Prep Course	47
Sergeant Missile	9	Jupiter-C Launches Satellite	65
What's New In Training Aids	61		
Paragraphs from the Pentagon and the Field	63		

ARMY TRENDS

HIGHLIGHTS OF ARMY PROGRESS

RESEARCH ■ DEVELOPMENT ■ WEAPONRY ■ ORGANIZATION ■ TRAINING

EXPLORER ALOFT. Dominating the news and lifting the eyes and hearts of free peoples everywhere, the successful launching of the Army's Explorer satellite on 31 January marked the Free World's entry into the Space Age. (See page 4 and back cover.) Although this phenomenal "first try" took place only twelve weeks after the "go-ahead" had been issued and occurred on the second birthday of the satellite's parent organization, the Army Ballistic Missile Agency, actually years of planning by key missile developers preceded the historic moment. (See page 7.) Progress, it seems, is compounded of a multitude of advances on a variety of fronts—all painstakingly achieved. Some recent noteworthy advances:

SOLID PROPELLANT MISSILE. Named the Pershing after General of the Armies John J. Pershing, a new solid propellant missile will soon be under development to succeed the Redstone, it has been announced. While retaining the Redstone's mobility, field worthiness and accuracy, the Pershing will be smaller, lighter and even more mobile.

SERGEANT JOINS WEAPONS FAMILY. Already powered by a solid propellant rocket motor, a completely new "second generation" tactical missile known as the Sergeant is scheduled for production as successor to the four-year-old Corporal. Possessing high reliability under extremes of heat, shock and vibration, and capable of delivering a nuclear blast deep in enemy territory, the Sergeant features a highly accurate guidance system which is virtually invulnerable to any known enemy counter-measures. The 30-foot-long Sergeant is extremely mobile, can be quickly emplaced and fired by a small crew. (See page 9.)

JUPITER TRAINING FOR AIR FORCE. More than two hundred Air Force personnel, members of the 864th Strategic Missile Squadron, are being trained in the employment of the Jupiter Intermediate Range Ballistic Missile at the Army's Redstone Arsenal, Huntsville, Alabama, preparatory to being deployed to Strategic Air Command bases overseas, where the Jupiter will be utilized.

NIKE-ZEUS ANTI-MISSILE PROGRAM. Secretary of Defense Neil H. McElroy has dispatched memoranda to the Secretaries of the Army and Air Force clarifying development efforts for defense against the Inter-continental Ballistic Missile. In substance, the Air Force will continue to concentrate on that part of its Wizard program that pertains to radar and data-handling aspects, including its relationship to SAGE and other radar capabilities. The Army is to continue its current development

effort in the Nike-Zeus program, concentrating on system developments to demonstrate the feasibility of achieving an effective defense against the ICBM. Both Services are directed to maintain the closest possible cooperation so that all major system components will be mutually compatible. Components of the Nike-Zeus—named after the supreme deity of Greek mythology who punished wrongdoers—are already in being and the complete anti-missile missile system is under urgent development.

PLATO ANTI-MISSILE. Still another effort under way in the anti-missile field is the Plato system, designed for defense of field armies against ballistic missiles. The Plato system will utilize some components of the Nike-Zeus system, and will be equally effective in its particular area of operation. Plato will be mobile to keep up with the field army, whereas Nike-Zeus will be fired from fixed installations.

As pointed out by Lt. Gen. James M. Gavin, Chief of Army Research and Development, "The Army is responsible for developing, procuring and operating point defense surface-to-air missiles to be employed against enemy piloted aircraft and missiles of all types. The Plato system, although basically a tactical weapon for our field armies, is also of vital importance to our overseas allies. . . It is extremely flexible and represents a tremendous step forward in electronic and missile technology."

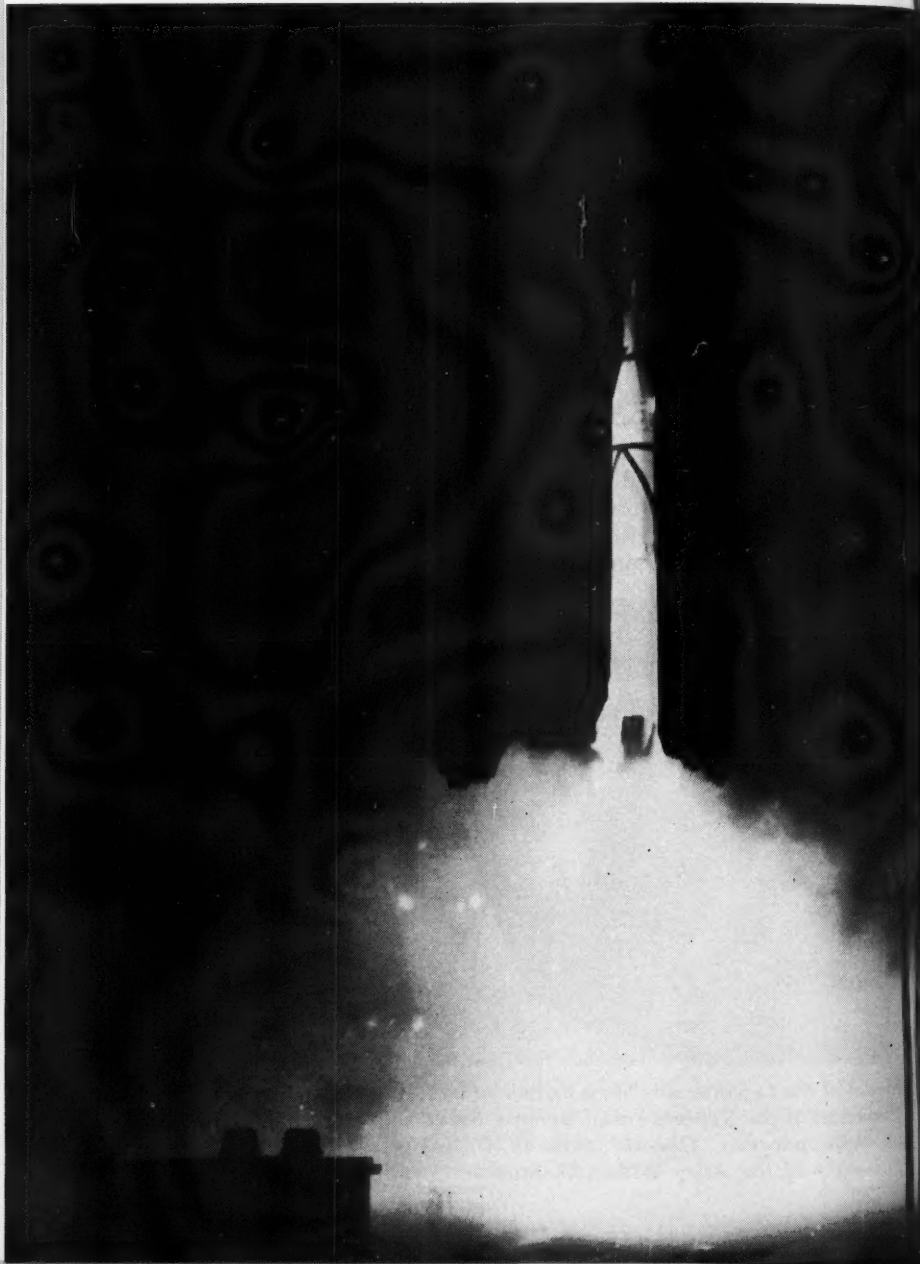
Successful tests have already been conducted on key components of the Plato system. Sylvania Electric Products, Inc., prime contractor for Army Ordnance, began working on the project almost four years ago, carrying on extensive studies at its Missile Systems Laboratory at Waltham, Massachusetts. The entire project is under technical supervision of Redstone Arsenal, Huntsville, Alabama, with contract supervision provided by Boston Ordnance District.



Model of the Explorer satellite is examined by Representative George H. Mahon, Chairman of the Department of Defense Subcommittee of the House Committee on Appropriations, General Maxwell D. Taylor, Army Chief of Staff, and Secretary of the Army Wilber M. Brucker.

Circling the Earth every 114 minutes—

First Free World Satellite Carried Aloft by Jupiter-C



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AT 2248 EST on 31 January 1958, a modified Army Jupiter-C missile—its rocket motors roaring and blasting orange flame—surged skyward from a floodlit launching pad at Cape Canaveral Missile Test Center, Florida, and disappeared from sight. Minutes later, it had carried into orbit the Free World's first satellite.

ARMY EXPLORER IN ORBIT

The 70-foot-long, liquid-fueled Jupiter-C intermediate range ballistic missile carried three solid-fuel booster rockets which operated in sequence, then disengaged at a predetermined point in the trajectory to propel the slender, tube-shaped 30.8-pound satellite into orbit.

Officially christened the Explorer, the satellite — 80 inches long, six inches in diameter, and carrying 11 pounds of instruments — has since been moving at an 18,000-mile-an-hour clip around the earth, its signals and movement providing invaluable data to tracking teams compiling data in support of International Geophysical Year research.

The placement of Explorer in orbit was accomplished by a military-civilian team less than twelve weeks after the Secretary of Defense directed the Department of the Army to "proceed with preparations for launching a scientific satellite."

Developed jointly by the Army Ballistic Missile Agency, Huntsville, Alabama, under command of Major General J. B. Medaris, and the Jet Propulsion Laboratory of California Institute of Technology, headed by Dr. William H. Pickering, the Jupiter-C launching vehicle was originally designed for

study of the re-entry problem which arises when the nose cone of a ballistic missile re-enters the relatively dense earth atmosphere.

The first stage, a product of ABMA, was powered by a liquid-fueled Redstone ballistic missile engine, while the upper stages consisted of solid propellant rockets furnished by JPL. The first stage powered the payload to the prescribed distance above the earth; the succeeding stages increased the speed to attain the desired orbiting movement. Upper stages were spin-stabilized, much like a rifle bullet, by use of electric motors mounted within the nose section of the main stage.

The "Explorer" is specially instrumented to gather and transmit four types of information—surface temperature, internal temperature, cosmic ray data, and extent of cosmic dust erosion of the projectile's surface. Relay of data was accomplished by two radio transmitters.

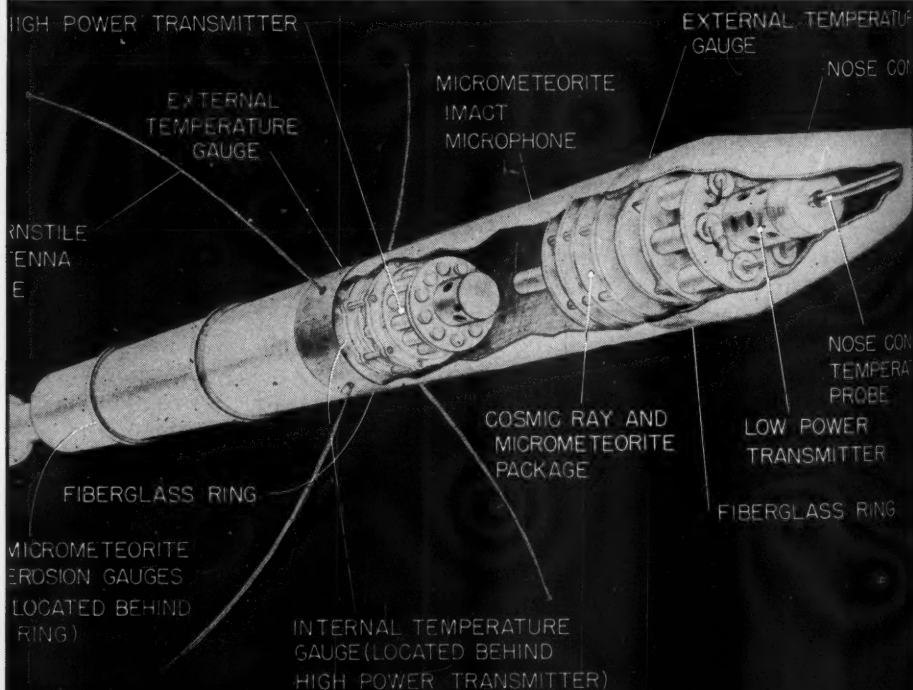
The satellite launching, assigned to the Army as a part of the United States effort in the International Geophysical Year, will be followed by additional firings designed to provide information on cosmic ray intensity above the earth's atmosphere, as well as other data of significance to the world scientific community.



The Explorer satellite was launched to orbit at approximately a 20 degree angle to the equator. This orbit keeps it circulating overhead in a zone between the 35th latitudes North and South. At an orbital velocity of 18,000 miles per hour, the vehicle will circle the earth about 14 to 16 times a day.

Over a sufficiently long time the satellite will come at least once within sighting distance of everyone within the orbital band, covering about 125,000,000 square miles of the earth's surface. Except under rare conditions, viewing will require low-power magnification.

The Explorer earth satellite has as its primary scientific mission the monitoring, measurement and observation of cosmic ray intensity above the atmosphere with respect to time and position. Secondary instruments (below) provide data on the density of micrometeorites, and the temperature inside and outside the satellite.



YEARS OF DEVELOPMENT PRECEDED LAUNCHING

THE ARMY'S satellite project began taking shape as early as 1954 when Private First Class Charles A. Lundquist, a Ph.D. and mathematician assigned to the Technical Feasibility Studies Office of Redstone Arsenal, became enthusiastic about satellite capabilities. His chief, Dr. Ernst Stuhlinger, who directs research projects for the Army Ballistic Missile Agency, encouraged and helped him. Lundquist went to work in his spare time probing orbital calculations and tracking problems.

A parallel effort got under way about the same time when Dr. Werner von Braun, now director of Development Operations Division, ABMA, asked Gerhard Heller, one of his assistants, to investigate high altitude temperature conditions which might be encountered by a satellite. At about the same time Josef Boehm, head of the Guidance Design Section of the Agency's Guidance and Control Laboratory, designed a complete satellite, which formed the basis for the actual satellite built by the Jet Propulsion Laboratory of Pasadena, California. (The JPL device was fashioned from metal instead of fiberglass as Boehm proposed.)

MEANWHILE Dr. von Braun determined the type and size of propulsion system that would be necessary to place such a satellite in orbit; he also established that the Army's Redstone Ballistic Missile could be modified for

the purpose.

In 1955 the Army and Navy proposed a joint satellite program dubbed "Project Orbiter." Later the same year, however, this was dropped in favor of the Navy's Project Vanguard. When, in 1956, the Missile Agency was assigned the task of developing the Jupiter Intermediate Range Ballistic Missile, it was decided that much of the work on Orbiter could be used to advantage.

THE aerodynamic heating problem associated with re-entry of a ballistic missile warhead had to be solved. With approval of Major General J. B. Medaris, experiments on re-entry were carried out. In September 1956 the first test was undertaken using an elongated Redstone missile for the first stage, and upper stages furnished by the Jet Propulsion Laboratory. The test was completely successful, with the rocket traveling more than 3000 miles. As a result of tests with Jupiter-C, the Army announced it had solved the nose cone re-entry problem.

Early in 1957 Dr. Lundquist, working with C. L. Bradshaw of the ABMA Computation Laboratory, designed a program to yield information on orbit, atmospheric density and the earth's shape. With this preparation behind them, and possessing a reliable missile system to be used as the booster, Agency personnel were ready when the Department of Defense gave the go-ahead on 8 November.



DEFENSE'S CHIEF EXECUTIVE

Neil H. McElroy

A CAPACITY for bold, imaginative enterprise in business, education and public affairs distinguishes Neil H. McElroy, the Nation's sixth Secretary of Defense who was sworn into office on 9 October 1957.

Secretary McElroy's directive of 8 November calling upon the Department of the Army to "proceed with preparations for launching a scientific satellite" recently culminated in the successful orbiting of the Free World's first earth satellite. Other decisions of even greater magnitude and long-range significance are being met with the characteristic initiative and acumen that carried Mr. McElroy to his present position as chief executive, organizer and coordinator of the Nation's defense effort.

Stemming from a family steeped in educational traditions, Mr. McElroy was born in Berea, Ohio, in 1904. His father was a high school science teacher; his mother a former schoolteacher. Following graduation from high school in Cincinnati, he was awarded a scholarship at Harvard University, where he attained a

Bachelor of Arts degree in economics. During undergraduate days, he played on the basketball team, performed in the college band, and served as president of his fraternity chapter, Sigma Alpha Epsilon.

Immediately after graduating from Harvard in 1925, Mr. McElroy went to work in the advertising department of Procter & Gamble Company of Cincinnati. He remained with that company for 32 years, advancing through various managerial and executive posts to become its president in 1949. He resigned as president of Procter & Gamble to assume his present duties.

REFLECTING his deep interest in educational matters, Mr. McElroy played a prominent role as Chairman of the White House Conference on Education in 1955.

His participation in civic affairs has included membership on the advisory boards of the National Citizens' Council for Better Schools, the Committee on University Resources of Harvard University, and the College of Medicine of the University of Cincinnati; trustee of the National Industrial Conference Board, Cincinnati Institute of Fine Arts, and National Fund for Medical Education. He also was a Director of General Electric Company and Chrysler Corporation. On becoming Secretary of Defense, he resigned from all these activities.

Married in 1929, the McElroys maintain their residence in Cincinnati. They have two daughters, Nancy Sue and Barbara Ellen, and a son, Malcolm Neil.

SERGEANT JOINS WEAPONS FAMILY

DELIVERING improved power and accuracy, the Army's newest ballistic guided missile—the Sergeant—is scheduled for production as successor to the four-year-old Corporal.

The Sergeant is a completely new weapon system representing America's first truly "second generation" surface-to-surface tactical missile. Possessing a high degree of reliability under all operating conditions, it can deliver a nuclear blast far behind enemy lines, and its highly accurate guidance system is invulnerable to any known enemy countermeasures.

Measuring approximately 30 feet in length, the Sergeant utilizes a solid-propellant rocket motor which provides better performance and storage capabilities than many other weapons systems. Its improved propellants and materials enable it to withstand extremes of temperature, shock, and vibration to which missiles may be subjected both before and during flight.

A highly mobile weapon, the Sergeant can be quickly emplaced and fired by a very small crew under all conditions of weather and terrain. All system elements have been especially designed for portability and mobility and are transportable by standard Army vehicles. The use of solid propellant and the advanced techniques for guidance have minimized system maintenance requirements and correspondingly simplified ground handling procedures and equipment.

In most tactical situations, solid-propellant motors, because they are convenient and easy to handle, are particularly adaptable to field operations.

The Sergeant was designed and developed for the Army by the Jet Propulsion Laboratory of the California Institute of Technology. It will be produced by the Sperry Gyroscope Company's Surface Armament Division at the Sperry Utah Engineering Laboratory, Salt Lake City, Utah.

Major sub-contractors in the Sergeant project include Thiokol Chemical Corporation, Trenton, New Jersey; Bell Aircraft Corporation, Buffalo, New York; Minneapolis-Honeywell Regulator Company, Minneapolis, Minnesota; and Excelco Developments, Inc., Silver Creek, New York.



**Deployed over seven states,
the 6th Region, U. S. Army
Air Defense Command
maintains its**

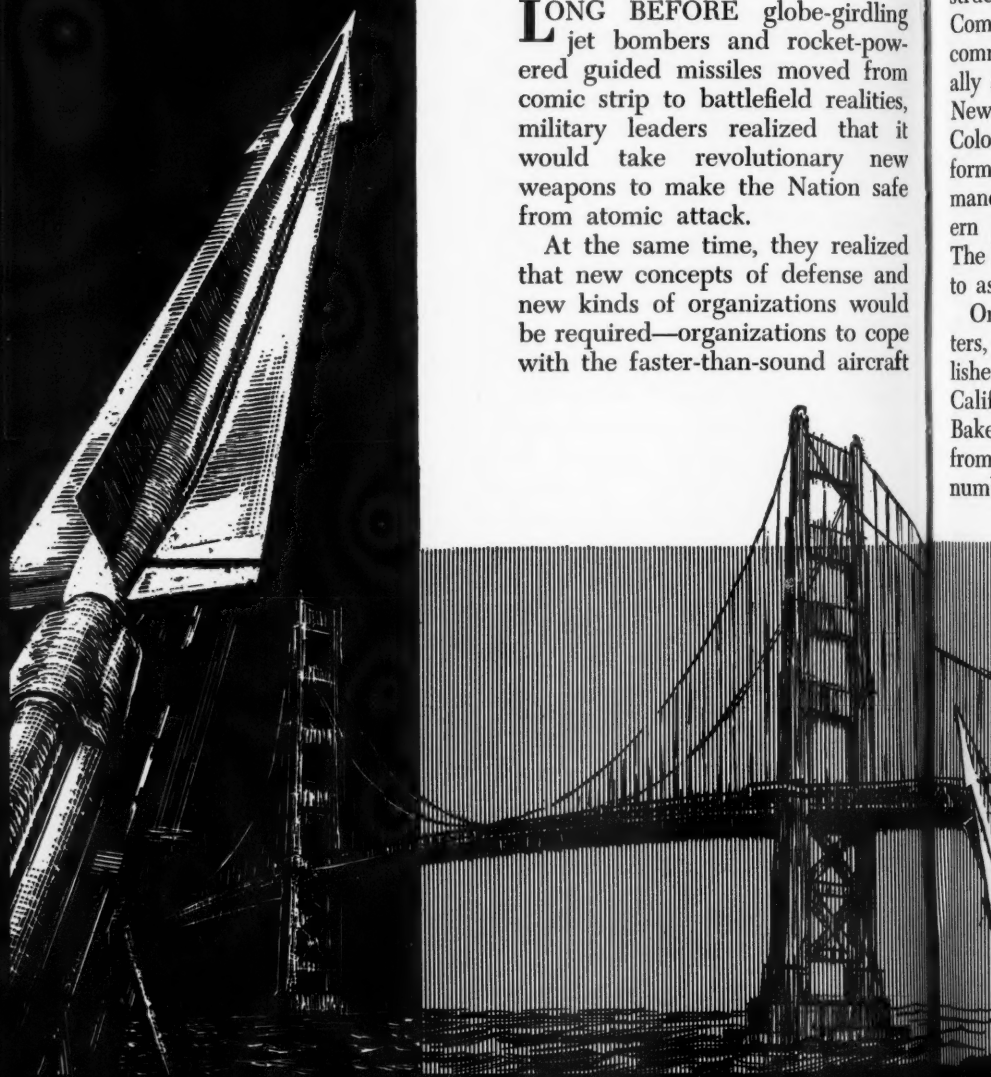
VIGIL IN THE WEST

Maj. Gen. Edward J. McGaw

**Commanding General, 6th Region
U. S. Army Air Defense Command**

LONG BEFORE globe-girdling jet bombers and rocket-powered guided missiles moved from comic strip to battlefield realities, military leaders realized that it would take revolutionary new weapons to make the Nation safe from atomic attack.

At the same time, they realized that new concepts of defense and new kinds of organizations would be required—organizations to cope with the faster-than-sound aircraft



and missiles that could carry nuclear or thermonuclear destruction.

To meet the challenge, the Army joined with industry in 1945 to produce the required weapons and organizations. The Nike and Hawk guided missile systems, longer-range radars and better communication and control systems have been the result.

IN ORDER that these might be used with maximum effectiveness and to provide a sound command structure, the Army Antiaircraft Command was formed in 1950. The command, with headquarters initially at Mitchel Field, Long Island, New York, and subsequently at Colorado Springs, Colorado, was formed with three subordinate commands—Eastern, Central and Western Army Antiaircraft Command. The latter was more briefly referred to as WESTARAACOM.

On 1 September 1950, Headquarters, WESTARAACOM was established at Hamilton Air Force Base, California, later moving to Fort Baker, California. Here it changed from the Western designation to a numbered Region and now is

known as the 6th Region, United States Army Air Defense Command (USARADCOM).

ORGANIZATION AND MISSION

THE Commanding General, 6th Region, exercises command over all Army air defense units assigned or attached to his region for the air defense of Western United States. As a component member of the Continental Air Defense Forces, West Continental Air Defense Command Region, the 6th Region air defense battalions are under the operational control of the Commander, West CONAD. The Commanding General, 6th Region, serves as Army Deputy and principal Army air defense advisor to the joint commander.

The purpose of CONAD Forces, West Conad region, is to deter, repel or destroy any attacking aircraft. Eventually the mission, of necessity, will be modified to include defense against missiles.

The Commanding General, 6th Region area of responsibility is identical to the area assigned to the Commander, Continental Air Defense Forces, Western Continental Air Defense Region, and includes the states of Washington, Oregon, Idaho, the northwestern part of Montana, California, Nevada, and western Arizona.

Four subordinate commands—called Northwest, Northeast, Southwest and Central West Army Air Defense Sectors—have responsibilities for areas equivalent to the four Air Force division areas.

The Commanding General of the 47th AAA Brigade at Fort MacArthur, California, for example, is the sector commander of the Southwest Army Air Defense Sector



which comprises the same area as the 27th Air Division. The Commanding General of the 31st AAA Brigade at McChord Air Force Base, Washington, commands both the Northwest and Northeast Army Air Defense Sectors which are equivalent to the areas of the 9th and 25th Air Divisions. The Commanding Officer of the 30th AAA Group at Fort Barry, California, commands the Central West Army Air Defense Sector, the same area as the 28th Air Division.

Since there can be no certainty from what point an enemy will strike, the Command must be prepared to meet attack from any direction at any time. This all-around concept requires location of some air defense sites in unusual, isolated, and out-of-the-way places—on mountain tops, in the desert, in the heart of major cities.

Army units made available for air defense are allocated to the protection of specific areas or installations. Such target areas are selected and assigned defense priori-

ties by higher headquarters. When these Army units begin to function on defense sites, operational control automatically passes to the appropriate CONAD division commander. Responsibility for training, administration, and logistical support of units remains with the Army.

ARMY NATIONAL GUARD ROLE

IN ADDITION to active Army units allocated for air defense, certain Army National Guard anti-aircraft units, designated Special Security Forces, have been assigned defense responsibilities. These Guard units come from the states within the region and are of two categories—those equipped with 75mm (Skysweeper) or 90mm guns and designated to move on M-Day to previously selected positions, and those undergoing missile conversion training at active Army sites. Selected batteries from the latter will replace active Army units and become on-site missile batteries under the tactical operational control of the Commanding Gen-

At strategic spots over a vast area, missiles of the command are poised for any emergency that might arise.



eral, 6th Region, when the conversion training has been completed.

In addition to training the missile battalions (and later exercising tactical operational control over them) the Commanding General, 6th Region, is responsible for supervising the training of all AA Army National Guard units in his area designated as Special Security Forces—i.e., ready for an M-Day mission.

FORGING THE RING OF STEEL

UPON their inception in 1950, WESTARAACOM battalions were equipped with 40mm automatic weapons and 90mm and 120mm guns, including the Army National Guard battalions ordered to active duty during the early months of the Korean crisis. As these battalions completed their active duty periods, they were replaced with other units of the active Army.

Starting in March 1953, the 75mm Skysweeper gun became one of the command's major weapons. The 52d AAA Battalion, then stationed at Camp Roberts, California, was the first unit to convert to the new radar-controlled weapons. It subsequently moved into the active defense of Strategic Air Command's Castle Air Force Base. Three additional battalions followed rapidly, providing defenses for March, Travis and Fairchild Air Force Bases.

The Nike guided missile was added to the West Coast defenses in July 1954, with the 740th AAA Gun Battalion of San Francisco being the first to trade its 90mm guns for Nike missiles.

The Atomic Energy Commission's Hanford, Washington, plants were the next to receive Nike protection when the 83d AAA Battalion

"The purpose of CONAD Forces, West Conad region, is to deter, repel or destroy any attacking aircraft . . . If ever enemy contrails are sighted over Alaska, or if the DEW-line, Mid-Canada line, Pine-Tree line, or the airborne or seaborne radar sections sound the alarm, the Army's air defense units will be ready."

converted to missiles in August 1954. Los Angeles and Seattle came under the protection of Nike later the same month.

The conversion has continued until today the 6th Region has only alert, accurate Nike missile battalions on operational sites. All of them now have the Nike-Ajax but many will soon also have the bigger, faster, more deadly Nike-Hercules.

Vital bases of the Strategic Air Command have gained Nike protection. Fairchild Air Force Base, Spokane, Washington, became the first SAC base in the United States to be guarded by Nike when the 10th AAA Battalion switched from Skysweepers to missiles in December 1956. The following month the 436th AAA Battalion turned in its "sweepers" for missiles in the defense of Travis Air Force Base near Fairfield, California.

OPERATIONS AND TRAINING

THE Continental Air Defense Command is a joint Command organized for the immediate air defense of the continental United States. Its Army component must be prepared around the clock to bring the full power of its weapons to bear on the enemy at a moment's notice. In order to integrate the

joint combat elements and coordinate their employment, joint training is the order of the day.

Air defense exercises provide the vehicle for this training. All elements of the defense engage in simulated combat against high-performance aircraft supplied from Navy and Air Force units. These exercises afford the opportunity to determine the state of training, develop new tactics and techniques, and test the capabilities of AA defenses. Obviously such training lacks the essential element of live firing.

To help compensate for this, Nike battalions are air-lifted to Red Canyon Range Camp on the White Sands Proving Ground, New Mexico, where they fire annual service practices with live missiles against radio-controlled aerial targets.

Service schools, Army area schools, and unit schools provide a continuous and balanced input of trained replacement personnel. Improvement in the quality of such training over the past few years is attested to by the steady improvement in service practice firings at Red Canyon and in the excellent ratings attained in air defense exercises and command inspections.

The around-the-clock readiness requirement, of course, is a morale factor of some consequence. This problem has been successfully handled by an intensive cross-training program designed to qualify men "three deep" in critical occupational specialties. Attainment of this goal permits an equitable distribution of duty time, leaves, and passes.

LOGISTIC SUPPORT

INTRODUCTION of the complex Nike missiles presented an

entirely new support mission. To exploit tactical capabilities to the maximum, missile sites were located well out from the defended areas. This dispersion, plus the literally thousands of parts used in this weapons system, created unprecedented problems for the logistician. In this case, the logistician turned out to be the post commander. He found himself with a series of small, widely dispersed, practically independent units which had to be maintained 24 hours a day, seven days a week.

Conventional concepts of support, wherein responsibilities and the means to accomplish them are centered primarily within the boundaries of an installation, had to be re-examined. It was apparent that support elements had to be moved forward to eliminate excessive time-consuming travel to and from post shops.

Accordingly, logistics moved to the troops. Subdispensaries were established on islands and across river barriers. Fully equipped mobile dental vans were provided. Ordnance, Engineer, and Signal detachments and supplies moved to forward, decentralized areas where they were available within minutes to air defense units. Cross-servicing agreements were arranged with Navy, Air Force, and even Forestry Service installations. Any service would do—providing it was the most economical, efficient and fastest way to do the support job.

A NIKE battery out of action at a critical moment may mean the destruction of a city. To minimize the time a unit is non-operational, an emergency spare parts requisition procedure known as "Blue

Streak" was authorized by Department of the Army.

When the support installation cannot supply an item that would remove a missile or any other major item from deadline, a "Blue Streak" requisition is submitted. It goes by telephone or message to the proper depot; the depot ships the item, usually within 24 hours, by air express or air freight. If an item is not in depot stock, the requisition for it is extracted to other depots and in some cases direct to the manufacturer for shipment.

CONSTRUCTION

FOR all practical purposes, 6th Region units now occupy permanent sites. Housing and administrative facilities at Nike sites are, in the main, of concrete block construction. A few sites have prefabs which will eventually be replaced. All facilities contain excellent barracks, day rooms, office and supply rooms, and craft shops. Multi-purpose outdoor athletic courts will soon be constructed at most sites, using non-appropriated funds.

Tactical facilities at launcher areas include reinforced concrete underground storage magazines, generator building, missile fueling area, missile assembly and test building and an acid storage area. At the control areas are interconnecting shelters between the control equipment vans, radars and generator building.

Current and future construction will result in conversion of sites to accommodate Nike-Hercules missiles and ground control equipment which will permit firing both Nike Ajax and Nike-Hercules. In addition, a phased program of improvements will bring older sites up to

the standard of the more recent ones, adding such features as sentry buildings, improved roads and parking areas, improved launcher blast pads, provision for separate NCO rooms and other items to improve operations, safety, living conditions.

SINCE the outbreak of hostilities in Korea and until December 1955, provision of family housing for anti-aircraft personnel was too often a hit-or-miss affair. With the rapid deployment of AAA units to on-site positions, men with families had to fend for themselves in locating houses, usually in high rent areas or at excessive distances from their duty stations.

Recognizing the effect of such a situation on morale and on opera-

Missiles in the San Francisco Bay area command approaches to the industrial heart of northern California.



tional effectiveness, the Army Air Defense Commander, Lieutenant General Stanley R. Mickelsen, took energetic steps to remedy it. Construction programs have been approved, providing for Capehart or appropriated fund (MCA) housing at Nike sites when adequate private housing is unavailable.

In March 1957 the 6th Region opened 36 units of MCA housing in the Seattle area, marking the first MCA houses built for air defense troops in the United States. In all, a total of 164 MCA units are scheduled for completion by spring of 1958.

In addition, 204 units are authorized under the Capehart law. Of this total, 92 units are under construction and will be completed in the spring of 1958; the remaining 112 are in final design stages. Completion of MCA and Capehart units in 1958 will fulfill 6th Region housing needs for the more isolated sites.

For immediate relief in populous areas, the 6th Region has been authorized 544 leased houses in the near vicinity of air defense sites.

Under the Army's leased housing program, privately owned homes are leased to the government and occupied by officers and enlisted men who surrender their quarters allowance during occupancy.

IF UNITS of the 6th Region never fire a shot in anger—and it is hoped that such will be the case—our country's investment will still have been worthwhile because of the deterrent force which the Army Air Defense Command represents as a component of the Continental Air Defense Command.

But if ever enemy contrails are sighted over Alaska, or if the DEW line, Mid-Canada line, Pine-Tree line, or the airborne or seaborne radar sections sound the alarm, the Army's air defense units will be ready.

The 6th Region, United States Army Air Defense Command is a proud combination of men, weapons and determination. Today it reaffirms the grim warning of the early American patriot who said, "Eternal vigilance is the price of liberty."

QUALIFICATIONS and procedures for enlistment and reenlistment for assignment to Guided Missile Units of the U. S. Army Air Defense Command (USARADCOM) are contained in AR 601-238. Men with or without prior service, who apply for enlistment or reenlistment, and those who apply from civil life at recruiting main stations, may enlist or reenlist in the Regular Army for assignment to USARADCOM, without regard to monthly quotas.

Enlistment in oversea commands is restricted to those who enlist or reenlist from within the service and is further restricted to those who have completed five-sixths of the normal foreign service tour. Those enlisting or reenlisting under provisions of these regulations will be assigned to a guided missile unit or training package of the United States Army Air Defense Command, upon completion of administrative processing and any required basic training. Applicants must be citizens of the United States.

THE ARMY'S ROLE IN THE MILITARY ASSISTANCE PROGRAM



Lieutenant Colonel Albert D. Schutz

THE Military Assistance Program is an integral part of the Mutual Security Program which is our Nation's basis for collective action with countries that share our aspirations for world peace.

LIEUTENANT COLONEL ALBERT D. SCHUTZ, Artillery, is on the staff of the International and Policy Planning Division, Office of the Director of Plans, Office of the Deputy Chief of Staff for Military Operations, Department of the Army.

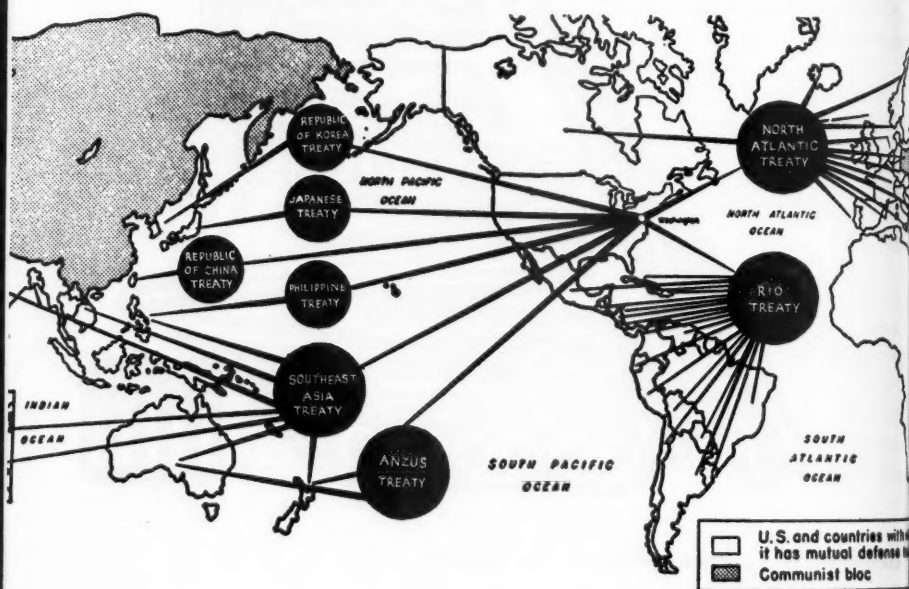
Strength through collective action is an effective means of countering the persistent threat of Communism which is dedicated to totalitarian rule and to imperialist expansion. Although the United States represents only six percent of the world population, it is economically the strongest member of the Free World and is therefore faced with the major responsibility of developing the Free World military strength.

Currently, the United States has military alliances with some 45 nations by means of bilateral treaties with Korea, Free China, Japan, and the Philippines, and multilateral agreements through NATO, SEATO, the Rio Treaty, and the ANZUS Pact. In addition it is a member of the military committee of the Baghdad Pact, which in-

cludes Iran and Iraq, two nations which are not members of any of our other alliances.

Significantly, the United States has alliances with Korea, Free China, Thailand, Pakistan, and Turkey—all of which abut the Sino-Soviet Bloc and are therefore faced with a continuing threat of military aggression. In each of

UNITED STATES COLLECTIVE DEFENSE ARRANGEMENTS



NORTH ATLANTIC TREATY

UNITED STATES
CANADA
ICELAND
NORWAY
UNITED KINGDOM
NETHERLANDS
DENMARK
BELGIUM
LUXEMBOURG
PORTUGAL
FRANCE
ITALY
GREECE
TURKEY
FEDERAL REPUBLIC OF GERMANY

RIO TREATY

UNITED STATES
MEXICO
CUBA
HAITI
DOMINICAN REPUBLIC
HONDURAS
GUATEMALA
EL SALVADOR
NICARAGUA
PANAMA
COLOMBIA
VENEZUELA
ECUADOR
PERU
BRAZIL
BOLIVIA
PARAGUAY
CHILE
ARGENTINA

ANZUS TREATY

UNITED STATES
NEW ZEALAND
AUSTRALIA

PHILIPPINE TREATY

UNITED STATES
PHILIPPINES

JAPANESE TREATY

UNITED STATES
JAPAN

REPUBLIC OF KOREA (South Korea) TREATY

UNITED STATES
REPUBLIC OF KOREA

SOUTHEAST ASIA TREATY

UNITED STATES
UNITED KINGDOM
FRANCE
NEW ZEALAND
AUSTRALIA
PHILIPPINES
THAILAND
PAKISTAN

REPUBLIC OF CHINA (Formosa) TREATY

UNITED STATES
REPUBLIC OF CHINA (Formosa)

these countries, indigenous forces are supported by American assistance. Likewise, in Europe our NATO allies have developed strength as a defensive measure, and military assistance is provided to Latin American countries which contribute to defense of the Western Hemisphere.

This collective security system has created situations of political and economic strength in critical countries whose weakness once invited military and economic incursions by the Soviets.

MILITARY ASSISTANCE

UNDER the Mutual Security Act of 1954, the Congress holds the President responsible for developing and implementing the Military Assistance Programs. By Executive Order, the President has delegated most of these responsibilities together with the necessary attendant authority. The International Cooperation Administration under the Department of State is responsible for implementing all of the programs under the Mutual Security Act, except Military Assistance.

In the latter instance, the President has assigned to the Secretary of Defense responsibility for the Military Assistance Program. The Secretary of Defense in turn has delegated to the Assistant Secretary of Defense for International Security Affairs (ASD/ISA) responsibility for formulating detailed policies and procedures governing the Military Assistance Program and for developing and implementing the Program.

To assist in the formulation of MAP policies and procedures, the Secretary of Defense has established the Mutual Defense

Assistance Management Council (MDAMC) with the Assistant Secretary of Defense (ISA) as Chairman. Other members of the Council are the ASD (Comptroller), ASD (Supply and Logistics), an Assistant Secretary from each Military Department, and a general or flag officer representing the Joint Chiefs of Staff (JCS). The MDAMC affords the Military Departments an opportunity to review proposed policies and procedures and to make comments through their representative.

THE Joint Chiefs of Staff are responsible for providing to the Secretary of Defense military advice and recommendations on international security affairs, including the continuous correlation of the Military Assistance Programs with military programs designed to fulfill United States plans and objectives on a world-wide basis. Specifically, the Joint Chiefs of Staff:

- Provide military advice and recommendations to the Secretary of Defense on military assistance matters.

- Provide military guidance, including military objectives, force objectives, program guidance, and recommended criteria for use in the development of the international security plans and annual Military Assistance Programs.

- Provide military advice on the refinement of annual Military Assistance Programs.

- Recommend the manner in which equipment will be made available from approved programs in order to meet emergency situations.

- Provide continuous review



This howitzer en route to France marked a milestone in mutual security assistance.

to insure that military assistance objectives and expenditures are in consonance with the United States global security plans and that allied forces most capable of assisting in the achievement of mutual security objectives are accorded priority in the development of Military Assistance Programs.

- Provide recommendations concerning priorities for allocation of military end items among recipient nations and between recipient nations and the United States Armed Forces.

The Commanders-in-Chief of Unified Commands in Europe, the Pacific Area and the Caribbean Area are the principal military officials responsible for implementing the Military Assistance Programs within their areas of responsibility. The Commander-in-Chief of the Unified Command directs the preparation of individual country programs by the Chiefs of the Military Assistance Advisory Groups (MAAGs) and he reviews and

screens the MAAG submissions to insure that they are in consonance with existing plans and policy.

THE ARMY'S ROLE

THE Department of the Army is responsible for developing and implementing approved Army military assistance training and materiel programs. As executive agency for the European and Caribbean Commands, the Department of Army is responsible for furnishing (or causing to be furnished) all necessary support activities and personnel required under the Military Assistance Programs for these areas. Within the Department of the Army, primary staff responsibilities are assigned to the Deputy Chief of Staff for Military Operations and the Deputy Chief of Staff for Logistics.

The Deputy Chief of Staff for Military Operations formulates the Department of the Army position on military assistance programs, develops and executes a program for the individual training of certain foreign military personnel, and discharges the executive agency responsibilities for the operational aspects of the Army portion of Military Assistance Programs.

The Deputy Chief of Staff for Logistics has the primary staff responsibility for implementing Department of the Army end-item programs, projects for Mutual Security military sales and offshore procurement. He is also responsible for preparation, review, and supervision of Department of the Army materiel programs, including the planning for procurement and production, and determining the logistical support required to maintain Military Assistance Programs.

MILITARY ASSISTANCE ADVISORY GROUPS

CURRENTLY there are approximately 4,100 Army officers and enlisted men assigned to Military Assistance Advisory Groups and Military Missions in 44 countries. Under the supervision of the Chief, MAAG, the service sections administer Army, Navy, and Air Force aspects of military assistance depending on the program applicable to the country concerned.

Generally a MAAG has eight broad objectives which, depending on the situation in the particular country, determine the direction and extent of its various military assistance functions. These eight objectives are to:

1. Advise and assist the country concerned in determining its military requirement deficiencies and in preparing requests for military aid.

2. Advise and assist in the receipt of United States materiel and effect its legal transfer to the recipient government.

3. Advise and assist the receiving government regarding identification, care, storage, and proper use of military end-items received under the program.

4. Advise and assist in the development of military training programs.

5. Observe and report on the use and maintenance of equipment furnished by the United States, and to insure that it is employed for the purpose stipulated.

6. Serve as the initial point of contact and information source for procurement officers regarding off-shore procurement matters in the country concerned.

7. Administer military training

programs (other than the country's own programs), including arrangements for the training of students in service schools in the United States and overseas, and to observe and report on the assignments of such students after completing this training.

8. Promote and encourage the expansion and development of the country's own training establishment and facilities, so as to reduce its dependence upon the United States for training support.

From these broad functions and objectives, it can be seen that advisory groups have two complementary but distinct responsibilities. First, they are charged with helping to raise the military capabilities of the countries in which they are operating. Second, they perform inspections and prepare studies and reports on the Military Assistance Program, to insure that it returns the maximum improvement in the overall military quality of the forces concerned.

ACCOMPLISHMENTS of the United States Army in support of our Allies are evident in many parts of the Free World. Two of the best examples are Greece and Korea. In 1947 the Communist ELAS was on the verge of taking control of the entire country of Greece. The advisory mission led

"In supplementing our country's defense, the tested and proven Mutual Security Programs give the American people more security per dollar invested than any other expenditure they make."

by General Van Fleet assisted the Greek Army in developing an effective force and thus enabled it to eliminate the Communist threat.

United States Army success in developing the Republic of Korea Army was an outstanding accomplishment. The Korean Army was established in 1948 and since that time has been under the continuous guidance of the U. S. Army Military Advisors. Training provided to the Republic of Korea Army enabled it to fight with distinction during the Korean conflict, and it is currently maintained in a state of readiness to act against further Communist aggression.

The close contact of U. S. Army personnel with the peoples of the Free World also has immeasurable value. This contact provides mounting evidence of our sincere determination to assist in the development of independent, sover-

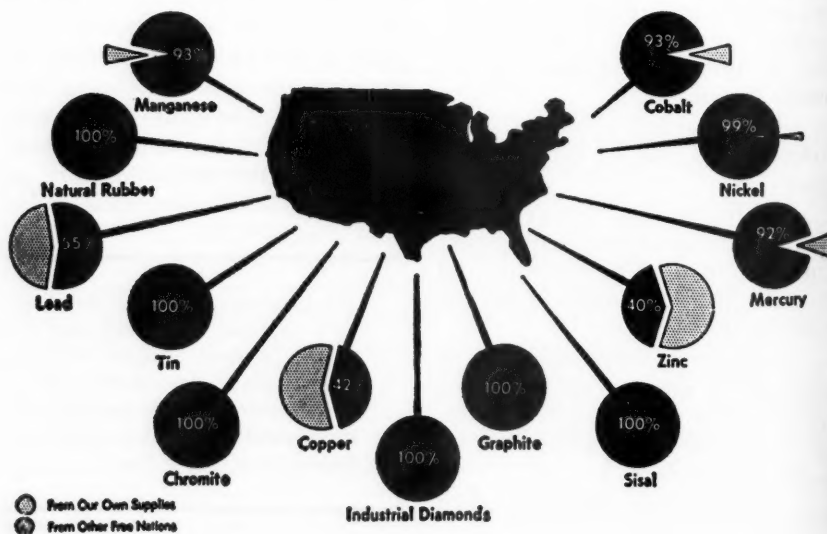
eign nations whose forces are capable of working with the United States and other free countries in combating the Communist threat. The mutual trust and understanding thereby developed is a means of counteracting the propaganda thrusts of the Communists in their efforts to discredit the objectives of the United States.

MATERIEL DELIVERIES

IN THE administration of the Department of the Army portion of military assistance materiel programs, the magnitude of the task becomes evident when we take into consideration the large amounts of materiel involved.

The distribution of this materiel has been vital to the build-up of existing forces of the Free World. Without this assistance many countries would have been faced with an inequitable economic burden.

United States Production Depends on Strategic Materials of Other Free Nations



Certain vital countries would have been incapable of participating in the program of Free World collective security and could have slipped under the Communist yoke.

Utilization of much of this equipment has required substantial specialized training for army personnel of many countries. This training has developed skills that will be reflected in military proficiency as well as in future growth of the economies of some relatively new and undeveloped countries.

TRAINING ASSISTANCE

ESSENTIAL training provided under the Military Assistance Program has substantially improved the training methods, standards, and the overall state of training of the armies of the Free World. To assure the proper utilization of equipment by trained units who may be fighting side by side with U. S. Army units, it has been necessary to introduce appropriate training methods and operational concepts.

The ultimate training objective is to develop within each country the capability of producing its own essential specialists, leaders, and combat trained units. This objective is being accomplished through training provided by assigned MAAG personnel, by training in U. S. Army service schools, and by mobile training teams and technical representatives.

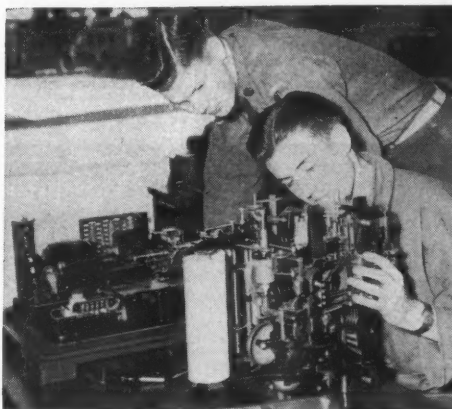
Experienced U. S. Army officers and enlisted personnel, serving in the field with many friendly armies, personally participate and assist in training activities. Although they do not occupy positions of command in their capacities as advisors, they strongly influence the



Netherlands soldiers study radio with U. S. Army in Germany.

"To assure the proper utilization of equipment by trained units who may be fighting side-by-side with U. S. Army units, it has been necessary to introduce appropriate training methods and operational concepts."

French students gain practice with teletypewriter.





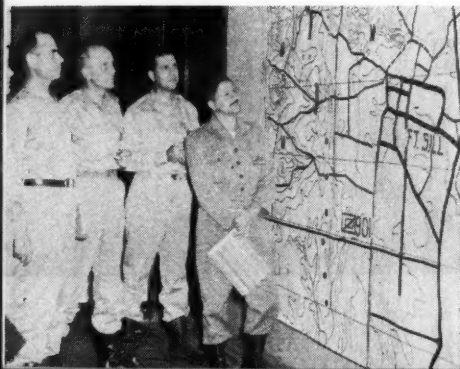
Viet Nam students attend Artillery and Missile School.



Turkish troops learn operation of 75mm recoilless rifle.



ROK soldiers learn to handle mortar. Italian, Turkish and Brazilian officers (below) attend Artillery Officer Advanced Course.



"Experienced U. S. Army officers and enlisted personnel, serving in the field with many friendly armies, personally participate and assist in training activities."

training of units with which they are associated.

Procedures followed in training centers, units and formal schools within many countries are therefore very similar to techniques and methods employed in Stateside units, training centers and schools.

FORMAL training of selected personnel is conducted in United States service schools and overseas schools. On 31 July 1957, some 28,000 courses had been given to carefully selected Allied personnel. Individuals are being trained to fill key positions in units or as instructors in service schools. The direct benefits of this phase of assistance can be measured in the increased potential of the graduates. As the numbers of such individuals increase, there is a proportionate improvement in the army of the country concerned.

Indirect benefits can hardly be measured. Exposure of these thousands of individuals to the American way of life has produced a profound effect. Their first-hand contacts and observations are an effective antidote to Communist propaganda.

Mobile training teams provide specialist training to supplement instruction by assigned MAAG personnel. On 31 July 1957, some 395 teams consisting of 2,000 individuals had been utilized. These teams are assigned on a temporary

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"Formal training of selected personnel is conducted in United States service schools and overseas schools . . . to fill key positions in units or as instructors."

duty status; thus the number of personnel assigned to MAAGs is kept to a minimum and critical specialists are more effectively utilized.

In addition to the mobile training teams, civilian specialists provide field instruction on highly complicated and newly developed equipment. On 31 July 1957, a total of 364 had been utilized.

With the help of military assistance from the United States, our allies are bringing into being ground forces which complement our own. Although they vary considerably in stages of development, these forces, as well as related supporting units, provide additional security to the United States.

COLLECTIVE SECURITY

OUR Nation's partners in mutual security are as indispensable to our own security as we are to theirs. Their forces, located in key strategic areas for the defense of the Free World, are largely supported by the countries themselves.

The recipient countries undertake to call up forces and pay primarily from their own funds for the cost of feeding, clothing, housing, and maintaining their armed forces. Reliance is placed upon the United States for critical heavy capital items of equipment which are beyond the capabilities of limited local budgets, foreign exchange resources, and production



Norwegian officer discusses problem at Command and General Staff College.



Japanese Ground Self-Defense Force members learn radar techniques.



Greek students attend EUCOM engineering school. Belgian officer (below) studies maps at Command and General Staff College.



facilities. Our allies furnish land, bases, and certain logistical facilities required by the United States.

Statistical or other comparisons of armed forces sizes and defense budgets cannot tell the whole story of what these countries are doing or are capable of doing. Weapons are of little value unless they are in the hands of men who believe in what they are fighting for and who have some hope and confidence in the future. The Western European NATO countries have, for example, increased their annual defense expenditures from about \$6 billion in 1949 to almost \$15 billion in 1957.

IN supplementing our country's defense, the tested and proven Mutual Security Programs give the

American people more security per dollar invested than any other expenditure they make.

For our Nation alone to undertake to withstand and turn back Communist imperialism would impose a colossal burden of defense spending on our people, which could ultimately cost us our freedom. For other free nations to attempt individually to counter this menace would be impossible. The United States, in its own interest, and other free nations in their own interest, have therefore joined in the building and maintenance of a system of collective security in which the effort of each nation strengthens all. Today that system has become the keystone of our own and of their security in a tense and uncertain world.

Air-transportable Equipment for Army Engineers

AN "airborne" maintenance shop which weighs 9000 pounds has been developed by the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Virginia, to speed field repairs of Engineer equipment. Mounted on a standard military $\frac{1}{2}$ -ton truck chassis, the steel-constructed shop can be air-dropped into inaccessible areas.

The unit carries oxyacetylene cutting and welding equipment and a complete assortment of hand tools.

Unique features include a power package unit consisting of a combination welding and power generating unit capable of producing seven kilowatts of 3-phase electric power and 200 amperes of arc welding current. The generator can also be operated as a motor driven welding unit using

power take-off from the truck engine; it also can use commercial power.

CAPABILITIES for quick construction of Army emplacements in forward areas have been enhanced with development of a portable electric tool set. Trailer mounted, the set is highly mobile and air droppable. Power for saws, light fixtures, reversible drills, impact wrenches, hammers, sanders and other electrically operated tools is supplied by a 3- or 5-kw, 60-cycle, 115-volt engine generator. The set, developed at the Corps of Engineers Research and Development Laboratories, eliminates many hand and pneumatic tools, and supplements those still required. It will be issued at platoon level in Army Engineer Combat and Construction Battalions.

Inventive minds at work in the administrative field accomplish a

Breakthrough in Record-keeping

Ollon D. McCool

THE TERM Research and Development usually conjures up mental pictures of mushrooming nuclear explosions, flashing missiles, beeping satellites, staccato-ing electronic brains. Rarely is the individual likely to think of pieces of paper. Yet it is just such pieces of paper—in mountainous quantities—that pretty well govern every action taken, including those in the research and development field.

Paperwork itself can use generous applications of research and development. During and since World War II, the management of the millions of papers made, read, mailed, and filed every day has alternately plagued and intrigued administrators. The heart of the problem, of course, is paper creation, or control of record inception at the source. But the practical aspect of the problem as it confronts the Army today is to cope with the papers now in being—both the wanted and the unwanted.

OLLON D. MCCOOL is Chief, Records Administration Branch, Adjutant General's Office, Department of the Army.

KEEPING Army records and disposing of them are areas which have been given considerable attention in the last decade. For nearly forty years, soldiers and civilian employees alike have come to know at first hand the War Department Decimal File Classification System. This is the Army's Bible for keeping files. Almost as well known, more recently, is the series of Army Regulations that prescribe what to do with records and when to do it.

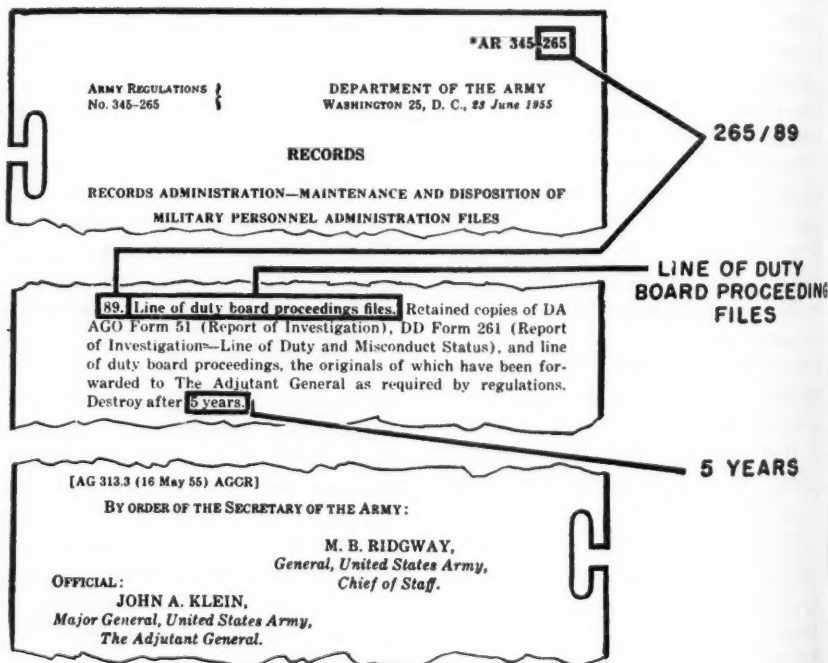
Considered individually, each of the two systems has served the Army well. The problem arises from the fact that there are two systems—one for filing, the other for disposition of records. That this difficulty is government-wide was recognized by no less an authority than the Hoover Commission's Task Force on Paperwork Management. In January 1955, the Commission's report recommended "greater coordination of filing systems with records disposal standards to permit easier access to important files and simplified disposal of valueless files."

THE Army has long sought a way to combine its filing and disposition systems. In 1956 a progressive and dedicated records management group in the Adjutant General Division, Headquarters U. S. Army, Europe found a solution to this problem after several months of study. From this study evolved the Integrated Files System—already nicknamed "IFS".

The USAREUR system is a classic example of the simple solution to a complicated problem. The trick is to find the simple answer. USAREUR did. Previous attempts were directed toward remodeling the disposition scheme to fit filing patterns—and all such attempts failed. USAREUR, however, ingeniously contrived its approach in reverse—adjusting the filing system to make it blend with the disposition system.

INDIVIDUAL pamphlets in the 345-200 series of Army Regulations cover functional areas of record-keeping, such as management, personnel, supply and medical services. Each pamphlet describes many kinds of files according to the function or transaction they represent. For example, the supply pamphlet contains descriptions of requisitioning, contracting, and vehicle maintenance functions. For each of these "files series" there is a title. This title or "file name" is used for disposition purposes. It appears in the voluminous records control schedules and records inventories that all headquarters prepare and keep current. It appears, also, on shipment lists when records are retired.

Use of this disposition title, together with a reference to the para-



graph of the regulation pamphlet describing the file, presented to the USAREUR group a workable basis for keeping files as well as for disposing of them. Functional filing instead of subjective filing was the simple solution many had sought, but USAREUR was first to find.

BRIEFLY this is how the Integrated Files System works: The twelve pamphlets, AR 345-250 through AR 345-285, constitute the twelve major functional divisions. Within each pamphlet the files series described in individual paragraphs represent the individual functions or transactions.

Papers are arranged first by the major function with which they are identified and second by the individual transactions they represent. The file number is made up of the

a. File Number.

The file number consists of the last three digits of the appropriate Army regulation followed by a diagonal (/) and the number of the paragraph that describes the file.

b. File Title.

The official file title is as listed in the paragraph of the Army regulation in which the file is described.

c. Retention

Period. The retention period is as indicated in the paragraph of the Army regulation that describes the file.

"Keeping Army records and disposing of them are areas which have been given considerable attention in the last decade. . . . The problem arises from the fact that there are two systems—one for filing, the other for disposition of records."

last half of the AR number and the number of the paragraph in the AR that identifies the record. Thus a record described in paragraph 89, AR 345-265 becomes "265/89" for filing purposes. The title of the paragraph becomes the name of the file. (See Chart.)

Having established the basic principle, USAREUR quickly set about testing it. The new system was installed in fifteen different organizations, representing a cross-section of the command. A total of 153 evaluations of the system were received from elements of the 15 test organizations. Favorable response was overwhelming—148 of the evaluations recommended adoption of the new system.

In presenting his report to the Department of the Army, the Commander-in-Chief, USAREUR requested approval to install the new system command-wide beginning 1 January 1958. His request was promptly approved. Command-wide use of the system will be watched closely during 1958.

Following successful initial tests overseas, applicability of the system in Stateside organizations is now being tested. (See box.) Records administrators of major Department of the Army agencies who have field commands have been briefed. Already, the number of volunteers

assures that a good representation of zone of interior organizations can be tested. A few have already started; more are now getting under way. Many refinements of the system are expected to result.

THIS bridging of the gap between the filing and the disposition systems is a significant accomplishment. The simple act of filing a paper in a way that also decides automatically its disposition has a potential savings value of many millions of dollars. Among the many benefits the Army expects to realize from the system, these predominate:

Elimination of the decimal system of filing. In any case, the 40-year old system would have needed a complete overhaul to bring it up to date. At best, it was always difficult to teach to new employees.

Elimination of records control schedules. These were invaluable in the early days of records management. But they are extremely costly to prepare and to keep current. It is no secret that schedules are a burdensome chore to personnel who have to perspire over them. Keeping them up to date in the face of organizational changes and new administrative procedures has long been a problem to top Army administrators.

Personnel trained in one system

instead of two. This, in combination with the pronounced trend to decentralize records to the offices who make them—instead of consigning them to the traditional “central” files—will simplify the training problem. Clerks will need to know only a few simple rules of the integrated system as they apply to the small number of different files they keep.

Greatly reduced costs in preparing, publishing and maintaining necessary written directives. Every arm and service has an established interest in the decimal system. Thus any extensive revision of this manual would be an expensive, time-consuming operation. (The last revision, in 1943, for example, was nearly three years “in the mill.”) Worse, perhaps, is the fact that the task would be in vain. The problem of harnessing filing to disposition, or vice versa, still would be unsolved.

THE Army's three million cubic feet of records constitute probably the largest single collection of active records in any government or private agency in the world. Development of a system which combines filing and disposition constitutes a major milestone in Army records administration—truly a major breakthrough in 20th Century military record-keeping.

Department of the Army Elements Currently Testing the Integrated Files System

CHEMICAL CORPS: Chemical Warfare Laboratories, Army Chemical Center.

SIGNAL CORPS: Central Files; Office, Chief Signal Officer; Decatur Signal Depot.

TRANSPORTATION CORPS: Office, Chief of Transportation, Gulf Transportation Terminal Command, New Orleans Army Terminal, Camp Leroy Johnson, U. S. Army Transportation Training Command, U. S. Army Transportation School, Fifth Transportation Terminal Command “B”, and Fort Story.

FOURTH U. S. ARMY: Command-wide.

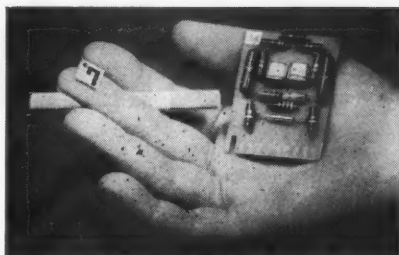
MILITARY DISTRICT OF WASHINGTON: Headquarters, Military District of Washington; Fort Myer, Fort Lesley J. McNair, Cameron Station.

Transistors Produced by Printed Circuit Method

ALREADY vastly reduced in size and weight, still greater reductions are in sight for electronic "brains" of guided missiles and other electronic items through a new printed circuit method of making transistors developed by Army research scientists.

The new method has been described as the "missing link" in continuing efforts to slash both bulk and weight of Ordnance electronic devices. Research scientists now foresee military equipment reduced to a tenth of its present size in some items by means of the printed circuit transistor. It also is expected to have great benefits for civilian industry.

As used in radios and other electronic equipment, the printed circuit method replaces complicated wiring and connections with circuits printed with metallic ink. By combining the transistor with the printed circuit, the new process appears ideally suited to

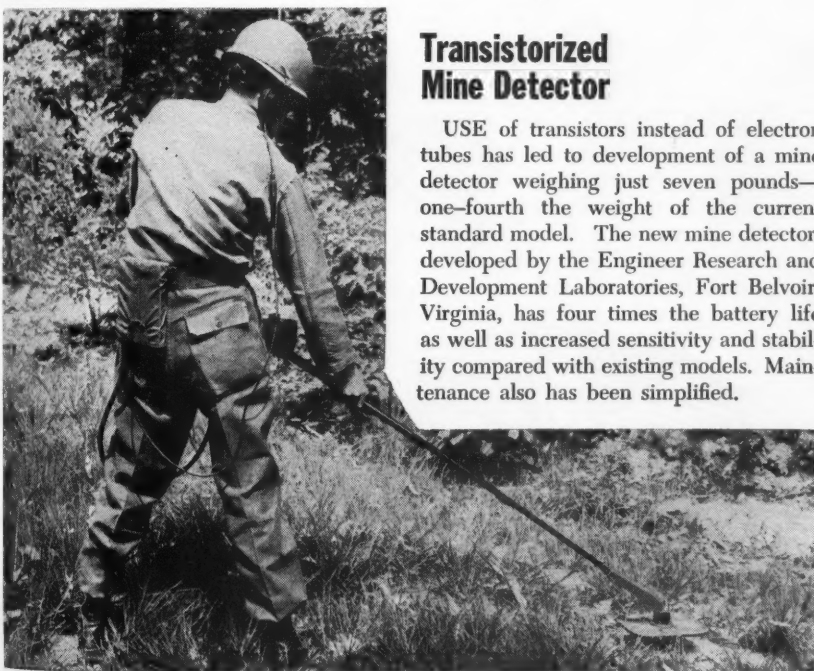


automation and rapid precision production at low cost.

Developed by Dr. J. W. Lathrop and James R. Nall, Civil Service employees of the Army's Diamond Ordnance Fuze Laboratories in Washington, D. C., the new method starts with a tiny wafer of the metal germanium. Photosensitive film provides precise positioning masks on a ceramic plate for the pin-point electrodes of the transistor. These electrodes are formed by vapor deposit. The transistors themselves also have been reduced in size to about a twentieth of an inch wide and a hundredth of an inch high.

Transistorized Mine Detector

USE of transistors instead of electron tubes has led to development of a mine detector weighing just seven pounds—one-fourth the weight of the current standard model. The new mine detector, developed by the Engineer Research and Development Laboratories, Fort Belvoir, Virginia, has four times the battery life as well as increased sensitivity and stability compared with existing models. Maintenance also has been simplified.



The man who seizes and holds ground is an ever-present

The Infantryman

Major General B.

TECHNOLOGICAL developments of the past few years have advanced such apace that the infantryman has been almost completely overshadowed by the purpose of seizing and holding ground. The just will of man can triumph upon the aggressor yet, at the history of the Army of the Infantryman more important it is today in the age.

Never before has the soldier supported by a wide variety of weapons with mesomorphic. Never has he had the mobility to strike the enemy in the rapid movement of ground, air or by jumping sky. No weapon has yet produced one which can do more than the

MAJOR GENERAL B. POWELL
Commanding General, Infantry
Commandant, U.S. Infantry
Benning, Georgia.



representative deterrent to war. His is the indispensable role of

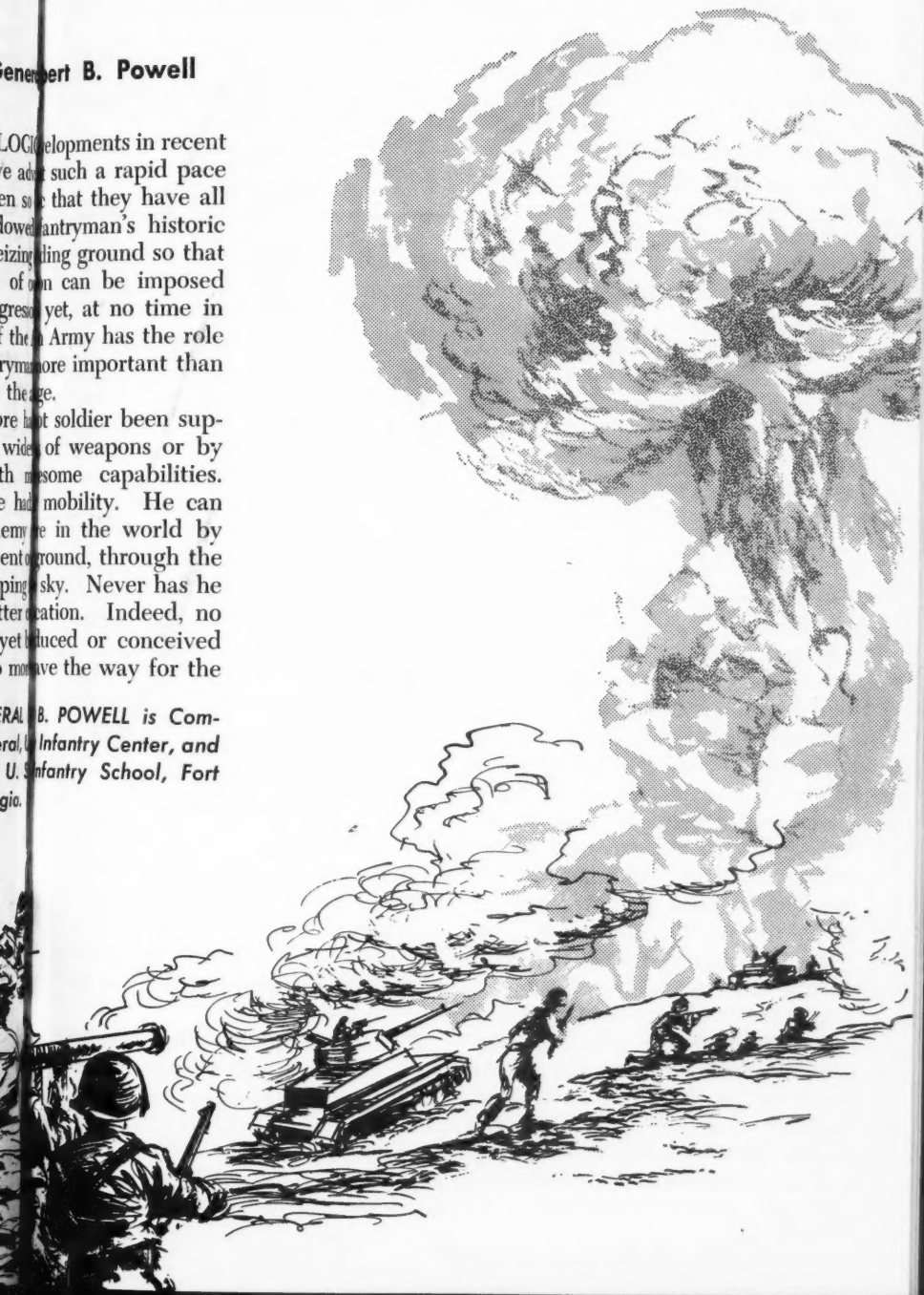
in the Atomic Age

General B. Powell

LOGIC developments in recent years have advanced such a rapid pace that they have all lowered the infantryman's historic seizing of ground so that of man can be imposed upon yet, at no time in the history of the Army has the role of the infantryman more important than in the atomic age.

More than any other soldier has been supplied with weapons or by the development of some capabilities. He has mobility. He can move anywhere in the world by air, land, or sea. He can go underground, through the air, or through the sky. Never has he been so well protected. Indeed, no one has yet produced or conceived of a way to move the way for the

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foot soldier—the indispensable force without whose presence land could not be held.

IN THE atomic age the Infantryman is still the symbol of our Nation's strength. He has not been replaced by anything that razes, radiates, flies, floats, buzzes, booms or bangs. Wherever he stands around the globe, with his rifle in hand and his feet planted firmly on the ground, he is visible evidence to any leader of Communist conspiracy that we mean exactly what we say—that we intend to resist aggression in any form.

He is the flesh and bone representative—on the spot—of our military might which includes the nuclear weapons, missiles, aircraft, tanks and all other tools in our arsenal which back him up. He is an ever-present and effective deterrent to war.

We know that the Communist bloc has never committed aggression in a country where the American combat Infantryman was physically present. But we know, also, that within months after our foot soldiers were pulled out of Korea the enemy crossed the 38th parallel. Powerful, but distant, weapons—which may or may not be used—do not appear to be as effective in deterring all forms of Communist aggression as does the presence of armed men on the ground.

The Communist realizes that if he attacks the American combat soldier, reaction will be swift and positive. There can be no doubt that he has committed aggression and no doubt, in his own mind, as to what America will do about it. He knows that he cannot explain later that he misunderstood our position

"Ground forces including airborne Infantrymen are the only forces really capable of seizing and holding the land essential to provide bases and the resources necessary for waging war and, in fact, for man's survival. Of the ground forces, the Infantry always has been and still is the arm of ultimate decision. Weapons alone, regardless of their power, cannot do this job."

—that he didn't believe we would go to war or that he believed we would limit means at our disposal.

The Communist may risk aggression in areas unprotected by the American foot soldier, in areas guarded by the threat or possibility of our intervention. He may gamble on our reaction to his aggression or on the speed with which he thinks we can act. But he will think long and hard, and be sure he is ready for all-out war, before he deliberately attacks the American soldier who stands physically and immediately in his path. In this respect, the Infantryman, with his feet on the ground, is one of our greatest restraining forces in the atomic age.

Our ability to hold our present allies and to gain new ones in the future could depend, to a major degree, on our foot soldier who stands beside their own defenders. His presence is tangible assurance of American support with all of its implications.

This undoubtedly does more to encourage the smaller nations to remain free than promises or remote, invisible tools of war. It gives them the courage and will to resist Communist pressures and helps to keep



the Soviets from eating up the Free World bite by bite, thus acquiring additional resources for a final struggle. This physical presence of the Infantryman plus the knowledge that airborne troops would be flown to any area of aggression could delay or even prevent that struggle.

MAN is a land animal. He spends most of his life on the ground. His home, his job and his resources are on the land surfaces

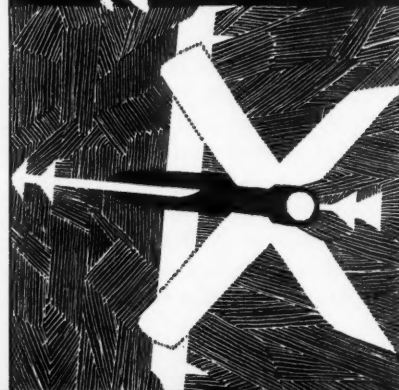
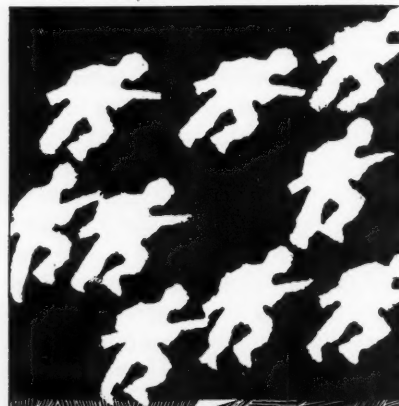
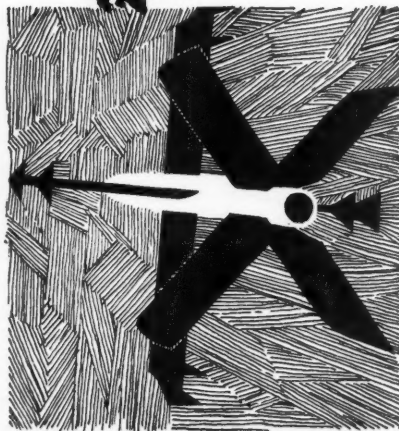
of the earth. Control of land areas and the people who inhabit these areas is essential to victory in war. Control of the air and the sea is important—to the extent that the air and the sea control the adjacent land and the people on that land.

Although our air forces wage their battles in and from the air and our naval forces fight on or from the sea, these forces depend upon land bases and land resources for the means with which to fight. The loss or destruction of these land bases and resources can seriously limit or eliminate their ability to fight. Ground forces including airborne Infantrymen are the only forces really capable of seizing and holding the land essential to provide bases and the resources necessary for waging war and, in fact, for man's survival.

Of the ground forces, the Infantry always has been and still is the arm of ultimate decision. It is the Infantryman who must ultimately close with and destroy the enemy. And it is the Infantryman who must hold the ground and control the people who live on it. Weapons alone, regardless of their power, cannot do this job.

Weapons alone did not destroy the German underground submarine pens along the French Coast in World War II. They failed to locate and destroy the Nazi rocket sites in Northern France and Belgium. Not until these vital areas were overrun by the foot soldier were they put out of operation. Nor did our tremendous air effort against the Ruhr destroy German production capabilities. In spite of all we could do, Nazi armament output in 1944 was double that of 1942.

In atomic war the enemy may be



expected to put more of his installations and resources underground to avoid destruction from missiles and nuclear blasts. The Infantryman, more than ever before, will be required—to dig him out of the ground and destroy him. General Willard G. Wyman pointed up this requirement recently when he said, "Until a B-52 can occupy a city or a submarine can take a hill, we will need men with their feet on the ground. The Infantryman will continue to be the conclusive element in war."

To perform this role in the atomic age the foot soldier must have increased capabilities. Some changes in weapons, tactics and techniques become necessary. But change is not new to the Infantryman. Throughout history it has been necessary for him to adjust to each new development in the means for waging war.

The invention of gunpowder, the machinegun, the tank and the airplane in turn brought claims that man could not face such weapons and survive to impose his will on the battlefield. But history itself proves that the Infantryman has always countered each innovation with a better weapon, with better organization and with revised tactics and techniques. He has maintained his decisive position in war by pitting his brain and courage against each new weapon and evolving methods of defeating it.

TODAY the Infantryman, once again, is faced with new and awesome weapons. He is in the process of adjusting to these conditions. Despite claims to the contrary—which he has heard repeatedly through the years and just as re-

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"Probably more than any other soldier, the Infantryman understands the value of teamwork and the need for the combined efforts of all arms and all services for his success—and more important, for successful defense of the Nation. He is no dreamer who visualizes a quick and easy defense of this country in a "pushbutton" war with weapons alone."

peatedly disproved—his decisiveness in combat will continue. The Infantryman will be on the battlefield, at the moment of decision, in nonatomic, limited atomic or all-out atomic war.

To appreciate the logic of this assertion it is necessary to look at what the Infantryman is doing today. With the skill and experience

acquired in defending this country in every war it has had to fight since 1775, the Infantryman is now adjusting to requirements imposed by nuclear weapons. He is accomplishing this task quickly, calmly and thoroughly.

You don't read too much about him in the press because he doesn't break individual records or pull off the dramatic "stunt." He makes no brash or sweeping claims that he can "go it alone" or that he is the sole answer to nuclear or any other kind of war. Probably more than any other soldier, the Infantryman understands the value of teamwork and the need for the combined efforts of all arms and all services for his success—and more important, for successful defense of the Nation.

NEW developments and increased capabilities by the other branches of the Army and the other members of our defense forces are not only welcomed but are wholeheartedly encouraged by the Infantryman. When he faces the enemy on the battlefield he wants all the strategic and local assistance he can get. He gives full credit to his brothers-in-arms, but he does not "shout" for personal attention. For he is quietly confident that when the chips are really down in any kind of war, he will have a decisive part to play and he will be ready.

No facet of combat in atomic or nonatomic war is being overlooked. The Infantryman is revamping his organization, his weapons and his tactics. He is developing the firepower, the mobility, the communications and the special techniques he must have to maintain his decisive role in combat.

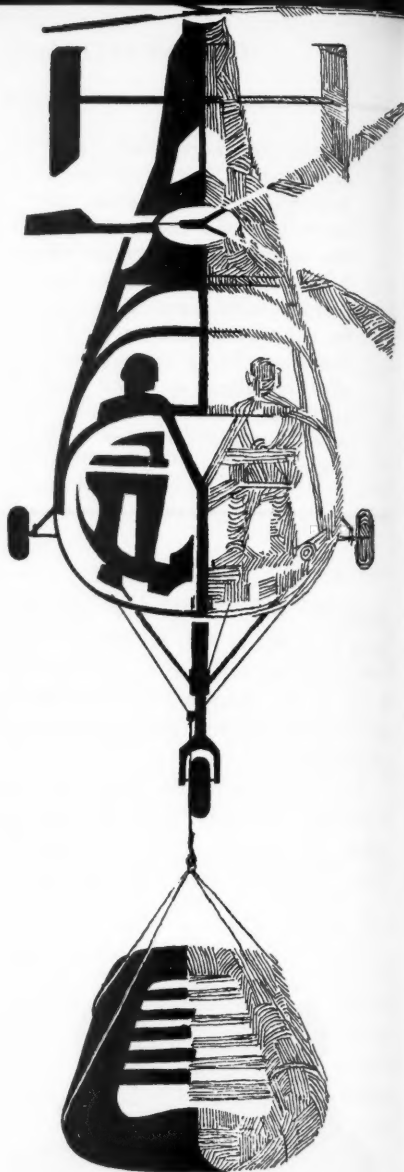


Major changes have been made in Infantry organization. The triangular division of World War II and Korea did not meet the mobility and dispersion requirements imposed by nuclear weapons. It has been replaced with new pentomic infantry and Airborne organizations created specifically for the atomic age.

With these new organizations, the Infantryman will be able to operate effectively in either atomic or nonatomic warfare. They give him increased air and ground mobility, greater firepower (including tactical atomic weapons) and better communications. They are streamlined organizations, stripped of non-essentials and reduced in size. Yet they have greater foxhole strength (more than 450 riflemen in squads) than their predecessors.

New weapons are being developed and procured. Recently, the Infantryman acquired a new, lighter rifle which will replace four of the small-arms weapons he used in World War II and Korea. He has approved and will soon get a new "all-purpose" machinegun which will replace the light and heavy guns he employed in three wars. He is getting improved recoilless weapons and mortars.

THESE, however, are but minor innovations already accomplished. In the future the Infantryman will have new and unheard of capabilities. He will have in his hands the means to penetrate the heaviest armor that can be thrown against him and he will carry in the front lines atomic weapons to blast his way forward or to dig the enemy out of his atomic shelters. He is working closely with all branches



of the Army in the development of missiles, tactical nuclear weapons and other tools of war which will support his advance on the atomic battlefield.

Equally significant are the changes that have been made and which will continue to be made in tactics and techniques. The In-

fantryman is learning to fight and survive in combat where both sides will use strategic and tactical atomic weapons. He is learning to concentrate rapidly from dispersed positions to seize objectives and then to disperse again, just as rapidly, to avoid destruction from enemy atomic blasts.

To do this he requires great battlefield mobility. He is getting it now through the use of armored personnel carriers, helicopters and other Army aircraft. In the future he can be expected to move over the atomic battlefield in flying trucks or individual flying platforms.

He requires better communications to control his operations under adverse conditions and over great distances. Better radios, television and other signal means are now being put into his hands. Just around the corner are helmet radios and other devices which will virtually wire every man for sound.

AS NEW technological developments occur and as new concepts are generated, the Infantryman will continue to adjust to the realities of modern warfare—atomic or non-atomic. He is ever conscious of his responsibilities and of the role he must play in any future conflict. He is not deterred by those who predict that his role will be lessened by new weapons. The Infantryman is a realist who has been matured by the many struggles in which he has met the enemy face to face, closed with him and destroyed him. He is no dreamer who visualizes a quick and easy defense of this country in a "pushbutton" war with weapons alone. He prepares for every eventuality.

Realizing that we face an enemy

with comparable nuclear capabilities and advantages in manpower and other means for conventional warfare, the Infantryman does not believe that the security of the Nation can rest primarily on a possible superiority of strategic nuclear weapons. He cannot justify the logic of those who claim that the enemy will surrender or that the war will be called off in a few weeks, after mass destruction attacks and retaliation have reduced the relative potency of both sides.

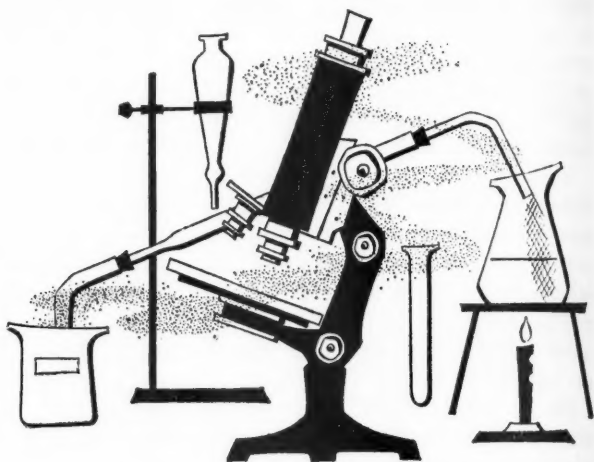
Hard, cold facts and dispassionate judgment, based on the nature of man and the history of war, dictate that the war will continue after nuclear destruction and the ultimate decision will still be made by the man on the ground. Our advance and success in combat, as in the past, will be measured only to the point where the Infantryman stands on the field of battle.

The Infantryman has no illusions about his job. He has spearheaded the advance in all of our wars. He has always met the enemy head on and destroyed him. He sees no easy way of defeating a foe in the future. He accepts this role without the incentive of personal gain. No amount of money prompts him to stand in the front-line and close with the enemy in personal combat. He does it because this is his job—because the defense of his home and country demands it.

You may call him "doughboy," "trooper," "dogface," "mudslogger," "gravel cruncher" or what you will, but the American Infantryman has always been the backbone of our national defense. You can count on him to be a decisive factor in keeping the Hammer and Sickle off our front lawn in the atomic age.

**Paths to professional advancement
are opened by the Army's**

SCIENCE DU



FOR THE young man of scientific bent, whose talents include an aptitude for technical subjects and an inquiring mind, a career in the Army not only offers the opportunity for service to the Nation, but also opens wide vistas for professional advancement along virtually every line of scientific endeavor.

Whether officer or enlisted, in United States or overseas, the qualified young soldier finds that, with innate ability as the prime criterion, he can achieve quick recognition of his abilities and move ahead to on-the-job training, professional studies or even advanced college work—all on full-time duty status, with Army pay and even tuition provided.

Largely as a result of Army initiative, thousands of young men who prior to enlistment or induction never suspected that their talents lay in scientific fields, are today attending electronic courses at Fort Monmouth, topographic and en-

gineering subjects at Fort Belvoir, or gaining skills in dentistry, psychiatry, dietetics, optics and hygiene at Brooke Army Medical Center.

In addition, approximately 4,000 enlisted men, holders of degrees in such fields as engineering, mathematics, statistics, accounting, chemistry, meteorology, astronomy, bacteriology, biology and psychology, are today working with pencil, slide rule or microscope, pursuing their chosen professions in some of the Army's key jobs.

Still other Army members—many of them career officers of the combat arms—are attending full-time courses in physics, chemistry, mathematics, and other science subjects leading to a master's degree or doctorate at 24 colleges and universities.

Within the Army's far flung educational system alone there are 35 schools offering some 500 courses from which more than 140,000 stu-

EDUCATION PROGRAMS

dents were graduated last year. And while all subjects have direct military application, a large percentage of these courses entail considerable training in scientific fundamentals.

No mere by-product of the current emphasis on things scientific, the Army has for some years continuously sought to identify scientific and professional talent and facilitate its development through appropriate on-the-job training, or by assignment to Army and civilian schools. This effort is channeled in four main programs:

- Service and troop schooling, including both resident and extension courses.
- Civil schooling at colleges and universities.
- Cooperative education which alternates class work with on-the-job experience, and
- Commissioning of technical specialists from civilian life.

SERVICE AND TROOP SCHOOLS

IN THE various service schools maintained by the Army for purely military training (*see box*), a variety of scientific-technical courses are open to individuals qualified by education, training or aptitude.

For those who meet the requirements, as determined by the Army Classification Test battery and personal interview, selection and schooling begins almost immediately upon entry into the Army. Because of a continuing need for enlisted specialists in electronics,

for example, classification and assignment personnel at reception stations are constantly on the lookout for incoming Army members qualified for certain Ordnance, Signal and Engineer courses.

Those who score 120 or higher in the Electronic Aptitude Area tests, or who have a background of hobby, study or actual work experience in electrical, electro-mechanical, or electronic equipment maintenance or repair, may be earmarked for attendance at specialized courses at the Signal, Ordnance, Air Defense or Artillery and Missile School upon completion of basic training.

In every case, of course, the needs of the service are paramount. Thus, considerations of school capacity, availability of course offerings, as well as current or projected overages or shortages in particular Military Occupational Specialties play their part in the classification and assignment process.

EACH combat arm, and each of the administrative and technical services, maintains one or more service schools, offering courses designed to develop leaders and specialists for their branch of service. A soldier with prior experience or aptitude in engineering would normally be assigned to The Engineer School, Fort Belvoir, Virginia. This Army service school provides training in bridge-building, soil analysis, map-making, drafting, topographic surveying, refrigeration equipment

repair, offset press operation, diesel engine repair, as well as operation of heavy construction equipment.

Currently, the Corps of Engineers Research and Development Laboratories is training men in operation and maintenance of mobile nuclear power plants. Specialists in this new field may take courses at the University of Virginia, or may participate in on-the-job training at Atomic Energy Commission test installations at Argonne National Laboratories, Chicago, or Arco, Idaho.

At the Army's Air Defense School,

Fort Bliss, Texas, men with mathematical ability and related aptitudes are trained in electronics, radar, electricity, hydraulics and guidance systems which enable missiles to seek and destroy targets. Training is also given in maintenance of complex fire control systems.

At the Ordnance School, Aberdeen, Maryland, soldiers learn to repair intricate optical and electronic mechanisms, as well as wheeled and tracked vehicles and weapons ranging from small arms to giant artillery pieces.

The Ordnance Guided Missile

Army Schools for Enlisted Specialists

A SELECTED LIST

<i>School</i>	<i>Location</i>
Adjutant General	Fort Benjamin Harrison, Indiana
Air Defense	Fort Bliss, Texas
Armor	Fort Knox, Kentucky
Army Aviation	Fort Rucker, Alabama
Army Information	Fort Slocum, New York
Army Intelligence	Fort Holabird, Maryland
Army Language	Monterey, California
Army Medical Service,	Chicago, Illinois
Meat and Dairy Hygiene	
Army Medical Service	Fort Sam Houston, Texas
Army Security Agency	Fort Devens, Massachusetts
Artillery and Missile	Fort Sill, Oklahoma
Chemical Corps	Fort McClellan, Alabama
Columbus General Depot	Columbus, Ohio
Engineer	Fort Belvoir, Virginia
Finance	Fort Benjamin Harrison, Indiana
Infantry	Fort Benning, Georgia
Judge Advocate General	Charlottesville, Virginia
Medical Nutrition Laboratory	Denver, Colorado
Ordnance	Aberdeen Proving Ground, Maryland
Ordnance Guided Missile	Redstone Arsenal, Alabama
Provost Marshal General	Fort Gordon, Georgia
Quartermaster	Fort Lee, Virginia
St. Louis Medical Depot	St. Louis, Missouri
Signal	Fort Monmouth, New Jersey
Southeastern Signal	Fort Gordon, Georgia
Transportation	Fort Eustis, Virginia
Walter Reed Army Institute of Research	Washington, D. C.

School at Redstone Arsenal, Huntsville, Alabama—home of the Redstone, Jupiter and Army satellites—opens up the revolutionary new field of propulsion and guidance to men seeking careers in this important weapons field. Much of the training offered here is of a unique and challenging nature.

At the Army Signal School, Fort Monmouth, New Jersey, available courses cover installation and repair of telephone, radar, television and telecommunications equipment, as well as techniques of motion picture and still photography. The Signal School also trains technicians in cryptography, high speed radio operation, installation and maintenance of various types of electronic equipment.

At still other schools, a variety of courses concentrate on technical aspects of administration, finance and budgeting activities, public and troop information, law, medicine, military police work and food service. Those specially qualified may be assigned to the Army Language School, Monterey, California, where intensive instruction leads to proficiency in foreign languages.

ENLISTED members who already possess a degree in scientific, engineering or professional fields are identified upon entry into service and, upon completion of basic training, are scheduled for utilization in jobs commensurate with their qualifications. The Adjutant General directs their assignment to two categories of jobs. Type A includes Army jobs closely related to civilian occupations requiring college training in research and development activities. Type B includes jobs not of a professional

"Within the Army's far flung educational system alone there are 35 schools offering some 500 courses . . . and while all subjects have direct military application, a large percentage entail considerable training in scientific fundamentals."

nature but effectively utilizing some phase of an individual's training and experience.

Identified as S&P (Scientific and Professional) personnel, these soldiers are assigned throughout the Army to such key installations as the Army Chemical Center, Army Biological Warfare Center, Redstone Arsenal, and White Sands Proving Ground.

Typical of the types of assignment opportunities available, a radiological chemist today works on radiation sterilization of foods. Another soldier-scientist, in the course of his military assignment, was able to design and construct a working model of a display and analog computer to cope with message-handling problems.

Besides providing resident instruction in classrooms, shops and laboratories, the various Army service schools offer Army Extension Courses for soldiers—officer and enlisted, active and reserve—who desire to pursue their professional or technical education by mail. At year's end, more than 130,000 were enrolled. (See "Education by Installment," June 1957 DIGEST.)

CIVIL SCHOOLING PROGRAM

SINCE 1946, the Army has conducted a Civil Schooling Program

for scientific and professional training of its officers. Recently, a stepped up program for training qualified officers of Infantry, Armor, and Artillery in the physical sciences was launched. Opportunity for attendance at civilian colleges and universities is available on a voluntary basis to those with above average undergraduate records in the physical sciences (to include calculus) or who have demonstrated special ability in this field.

The applicant must be a Regular Army officer or an officer of a reserve component on active duty; he must volunteer in writing and normally must be able to complete the training prior to attaining age 37. He must agree to remain on active duty for four years after completing the schooling.

Under this program, the student

officer receives full pay and allowances, with tuition costs, textbooks, expendable supplies and the like paid by the Army.

Normally an assignment following completion of such schooling is to a selected position for a three-year utilization tour, following which the officer reverts to the normal career pattern of his branch. Graduates do not automatically become part of the Army specialist program; however, in certain critical fields repetitive assignment may be made.

Since the program began in 1946, more than 3,000 officers have been trained in various fields. More than 1,000 were officers of the combat arms, of whom 450 were trained in physical sciences. Currently, some 525 officers are enrolled in 24 colleges and universities.

A "Co-op" student from Drexel Institute shapes a radio tube during work at Signal Corps Engineering Laboratories.



COOPERATIVE EDUCATION

EVEN after completing Army service, the aspiring student-scientist can engage in academic studies and gain work experience under Army auspices—with pay provided by the Army.

At numerous Army installations nationwide—including such research centers as Redstone Arsenal, Signal Corps Engineering Laboratories, Quartermaster Research and Engineering Laboratories, White Sands Proving Ground, and elsewhere—more than 700 college students are alternating academic courses with practicalities of on-the-job experience as civilian employees of the Army under the Cooperative Education Program.

Particularly applicable to Reserve Forces Act trainees and two-year inductees upon completion of military service, this work-study plan permits selected men and women to hold Army jobs while they attend college. At the same time, the Army develops a pool of young college graduates acquainted with Army research procedures to fill its engineering and science positions.

Under agreements reached with colleges and universities located near Army installations, cooperative education programs are set up to

"No mere by-product of the current emphasis on things scientific, the Army has for some years continuously sought to identify scientific and professional talent and facilitate its development through appropriate on-the-job training, or by assignment to Army and civilian schools. This effort is channeled in four main programs."



Studying effects of disease on tissue, technician operates binocular microscope at Armed Forces Institute of Pathology.

provide students with alternating periods of study and work experience in fifteen fields of engineering, science and business administration.

Normally five years are required to attain a degree, with 36 months devoted to academic studies and 24 months to work phases. Students are paid a salary while in a work status, and are placed on leave without pay while attending college.

Most "Co-op" students enter at the GS-2 level with a salary of \$1.42 an hour. Periodic promotion is authorized by the U. S. Civil Service Commission as the student progresses toward his degree. A student with a satisfactory record may progress from GS-2 to GS-5 prior to graduation, and then is eligible to be employed in a professional position. After three months of experience as a regular professional employee, eligibility is established for the GS-7, Step 7 level at a monthly salary of \$445.



An engineer soldier-scientist and a sergeant trained as nuclear power plant operator study control panel circuits at Fort Belvoir.

CURRENTLY more than 4,300 industrial firms and government agencies throughout the nation are cooperating with colleges in providing developmental experiences for some 20,000 "Co-op" students.

Army participation in the program began in 1949, when the first group of students from Drexel Institute entered employment at Frankford Arsenal in Philadelphia. Today the largest Army program is conducted at White Sands Proving Ground, where since 1952 more than 200 students of New Mexico A&M College have been employed. With thirty Army installations joining with 59 colleges and universities nation-wide, the Army today is one of the largest employers of "Co-ops" in the United States.

TECHNICAL SPECIALISTS

IN THE quest for critical scientific skills needed in today's Army, direct commissions in the Regular Army are continuously open to men possessing master's or doctor's degrees in certain technical specialties, as set forth in Army Regula-

tions 601-100. In addition, reserve components commissioned officers in certain specified critical fields may be selected for call to active duty on a voluntary basis under provisions of Army Circular 601-7.

As an important adjunct to these programs, direct commissions up to the permanent grade of captain are being offered to qualified scientists under a special Army recruitment program known as Project 200.

Particularly sought by the Army are specialists in aeronautical engineering, bacteriology, chemical engineering, chemistry, civil engineering, communications engineering, electrical engineering, electronic data processing, electronics engineering, guided missiles, health physics or radio biology, hydrology, mathematics, mechanical engineering, meteorology, nuclear effects engineering, nuclear physics, operations research, physics, and psycho-physiology.

Specialists in any one of these twenty fields who are United States citizens with a doctor's degree, or who have a master's degree and

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three years post-graduate work, or a bachelor's degree and five years of related post-graduate experience, and who can complete twenty years of commissioned service prior to age 55, were invited to apply before 1 January 1958.

Those accepted will be given opportunities for advanced work in research and development, often in conjunction with civilian industries. In addition, career development normally will include opportunity for attendance at graduate schools and universities, as well as attendance at one or more of the Army's schools of advanced learning.

Already, approximately 200 applications have been received. After evaluation and processing, it is expected that a substantial number of scientific specialists will be appointed to permanent commissioned status under Project 200.

THUS, at every stage, from the recruit unaware of his scientific potential until identified by Army

classification tests and earmarked for special schooling, to the most advanced specialists who have already proved their mettle in scientific fields, the Army seeks to discover, identify and bring to full fruition any inherent scientific capabilities of its personnel.

Working through these four established programs, the Army utilizes the laboratory method of careful analysis, evaluation and selection to unearth its "hidden treasure" of technical and scientific competence, then encourages its full self-realization through all available means, including existing civil and military school systems.

And while important results are steadily being achieved, the search for enterprising minds goes on—for men of creative abilities and scientific imagination who can bring to bear a dynamic force called knowledge to help advance our Army's technological superiority—and the Nation's security.

STAFF COLLEGE ANNOUNCES PREP COURSE

THE U. S. ARMY Command and General Staff College has developed a "Prep Course" for officers of any component or service who anticipate attending either the regular or associate course at Fort Leavenworth.

Enrollments are now being accepted. Qualifications include completion of an advanced branch course or anticipated completion within one year.

Completely up to date in ROCID and ROCAD organizations, the course consists of several correspondence subcourses that an officer may take no matter where stationed. The College estimates that an officer can complete the course in about ten months by devoting three or four hours a week to it.

Increasing complexity of the Army and the widely diverse backgrounds of officers who attend the College have brought about the need for a preparatory course. An officer who finishes the Prep Course is well versed in new divisional organizations, activities of a division general staff, and nuclear weapons employment—an invaluable background to the resident course.

Any officer—Reserve, National Guard, or Regular—anticipating attendance at the U. S. Army Command and General Staff College is invited to address inquiries concerning the Prep Course to the Department of Non-resident Instruction, Command and General Staff College, Fort Leavenworth, Kansas.

**"Is this report really essential?"
is the first question asked by
Comptroller agencies reviewing**



THE ARMY'S RECURRING REPORTS

Lieutenant Colonel Charles M. Grimshaw

THROUGHOUT the years, as a result of the many tasks given to the Army, a network of organizations has accumulated which in turn has generated increased reporting requirements.

In addition, new reporting requirements have been created by new programs, such as the single manager operations and new financial management systems—Financial Inventory Accounting, Stock Funds, closer expenditure controls, and the like.

Centralization of authority, too, has played its part, creating the

need for greater detailed reporting at successive echelons. Commenting on excessive reporting generated by centralization of authority, General Matthew B. Ridgway, while Army Chief of Staff, once observed:

"Centralization of authority beyond that required for proper supervision succeeds only in producing more forms and reports, deadlines and delay. Responsibility and authority must be returned to the field.

"After maximum decentralization is achieved, staff officers should be concerned with appraisal of results, not with operating details. Do not discourage initiative in the operating agencies by having them report in detail on their delegated responsibilities and authorities. Too fre-

LIEUTENANT COLONEL CHARLES M. GRIMSHAW, *Armor*, is Assistant Division Chief, Reporting Standards and Policy Division, Office of the Director of Progress and Statistical Reporting, Office of the Comptroller of the Army.

quently operating agencies assume they have completed their responsibility when they have reported their problems to higher headquarters.

"Establishment of policy and decentralization of responsibility for operations do not imply any need for a report. Army directives are assumed to be followed by all echelons without requiring proof through reports and certifications. Supervision, audit, and inspection are still the basic methods of enforcement."

TODAY a total of about 1,100 recurring reports are required by Headquarters, Department of the Army agencies, U. S. Continental Army Command, higher authority and other non-Army agencies. Another 1,300 reports are required for internal use by major commands, such as technical services, ZI Armies and oversea commands. It is estimated that installations have imposed on themselves an additional 12,500 reports. Thus the

Army's reporting system is made up of nearly 15,000 recurring reports.

The costs of reporting, whether justified or unjustified, are substantial. Recent surveys, for example, showed the following estimated annual costs of preparing reports at various installations: Fort Leonard Wood, \$879,000; Utah General Depot, \$391,000; San Francisco Port of Embarkation, \$451,000; Picatinny Arsenal, \$443,000; Fort Ord, \$807,000.

IN VIEW of all this, the inevitable question arises—are recurring reports needed?

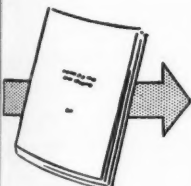
The answer is strongly in the affirmative. Effective planning for a multitude of diverse activities and proper directing of complex Army operations depend upon the availability of factual information in usable form. Such information must be communicated from its point of generation to the point of planning and direction. Reports provide the means for this communication.

REPORTS CONTROL

PROPOSED REPORT
SUBMITTED

EXAMINED TO
DETERMINE:

EVALUATED

- 
1. Is this report essential?
 2. Will it do the job required?
 3. Is it the best way to do it?
 4. Does it fit into the over-all patterns of reporting organization and procedures?
 5. Are instructions complete and clear?

If some answers are NO —

Disapproved
or

modified after
consultation with:

1. Initiating agency
2. Preparing agency
3. Others concerned
and

Approved

If all answers are YES —

Approved

Recurring reports regularize and standardize the means of communication. They provide the mass of information and detail needed to manage the Army. In addition, some recurring reports are necessary so that administrative action may be based on regular, definite, factual measurements of conditions rather than on opinions, guesses, and fragmentary information.

In summary, recurring reports provide much of the raw material for review and analysis of operations. They can indicate deficiencies and the need for corrective action. They provide an impersonal, objective basis for measuring the effectiveness of work.

A MAJOR problem, however, is the amount of non-essential detail which may be communicated from one echelon to another. In certain areas of reporting there is little doubt that masses of voluminous data are a plague to management. Whatever usefulness these data once had is virtually lost in its volume. The mass data all but defies any attempt at intelligent and profitable review and analysis. So many measures of performance, progress, and accomplishment may be included that conflicting conclusions can be drawn owing to inadequacies, inaccuracies, or limited but misunderstood significance. This is needless and costly.

To this cost must be added the even greater extravagance of paying the cost of management without receiving the full benefit of management's services. In some cases the primary purpose of management staffs—i.e., establishing policy and criteria—may be subordinated to the superficial task of

compiling, summarizing, policing, and evaluating mountains of statistical data. The final result, in many cases, is that management is not performing well at either the operating job, which it has usurped, or the managing job, which it should be doing.

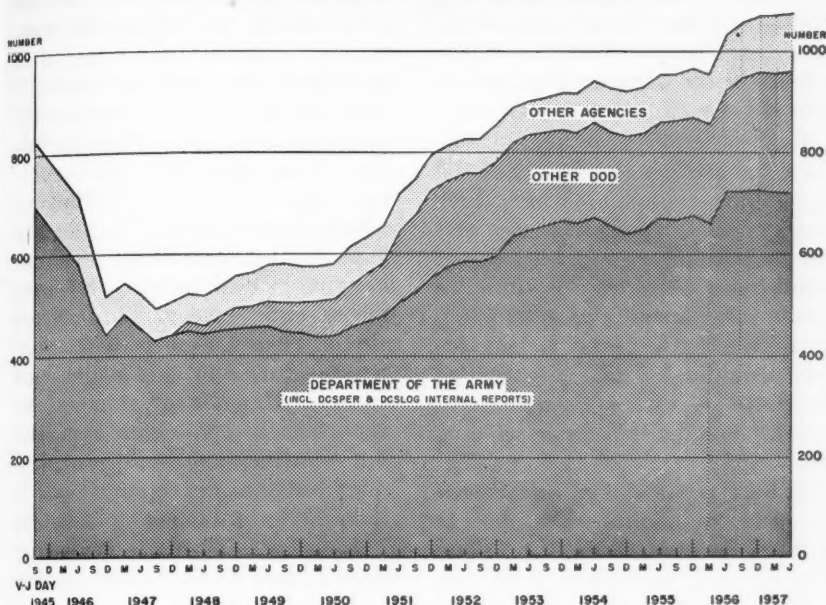
Consequently, while it is true that recurring reports are needed, or at least were needed at the time of inception, many of them may contain more detailed data than are needed by the receiving authority for planning or management action.

A GOOD REPORT should provide management with an orderly flow of readily usable, timely, summarized information. At each successively higher echelon the information in "operating" and "management" type reports normally should be received in a state of greater refinement and summarization. To the fullest possible extent, the principles of management by exception should prevail.

The report must provide "need to know" information, and the reporting procedures which are established must be integrated with operating procedures. When the report requires the installation of additional records solely for the purpose of preparing the report, there is conclusive evidence that either the report is not "need to know" information or the basic operating records are not adequate. Each report should be required to "pay its own way," its purpose carefully weighed against the cost of achieving it.

In addition, the agency receiving the report should have the authority to act on the information reported. Operating details should

ACTIVE RECURRING REPORTS



not be reported to an authority higher than that at which the action decisions on these details are made. Conversely, the information received by an agency with authority to act must be appropriate for its functions and responsibilities.

HOW, then, does the Army ensure that it has good recurring reports going to appropriate authority to act?

The Army has developed a system for control over the initiation of reports. On the one hand, such a system is aimed at keeping reports to a minimum of essentials; on the other, it is aimed at assuring adequate and meaningful coverage of all activities which are important to management control and lend themselves to economical reporting. The aim is to effect and maintain a balanced, coordinated reporting

system which conforms with established standards.

The Reporting Standards and Policy Division, Office of the Director of Progress and Statistical Reporting, Office of the Comptroller of the Army, is responsible for staff and technical supervision of the reports control system throughout the Department of the Army. This includes establishing principles, plans, policies, and standards for the operation of the reports control system, final official interpretation of reports control regulations and procedures, and guidance and technical inspection of reports control offices.

SINCE individual consideration cannot be given at Headquarters, Department of the Army to each report, the reports control system operates on a decentralized basis.

In this way reports control officers at various subordinate echelons throughout the Department of the Army exercise jurisdiction over the reports of the command or agency served by them.

Reports control personnel are there to assist the personnel of the agency or command which they serve. They try to achieve and maintain conformance with standards of good reporting as related to good management. The jurisdiction they exercise over reports includes responsibility for final approval or disapproval, and subsequent revision, continuation or rescission. The technical aspects of jurisdiction over reports at various echelons are completely described in Army Regulations 335-15.

THE reports control system has as its objective the development of good reports and good reporting systems involving the least possible workload. It is concerned with the adequacy and necessity of reports; the content, procedures and methodology of reporting; feasibility of deadlines; adequacy of coverage; and the accuracy of controls of report-preparing and using agencies.

The system also provides a series of central points of reference as to the kinds of data being assembled, thus facilitating multiple utilization of data.

OFTEN the question is asked, "What is the Department of the Army doing to eliminate non-essential detailed reporting and thus reduce the reporting burden?"

One of the procedures currently being employed is the Periodic Review of Reports. This check program provides for a continuous, orderly review of recurring reports at prescribed intervals, with the objective of evaluating each report at least once a year. To establish a sound basis for corrective action, the procedure combines evaluations by selected agencies required to prepare each report with appraisal and rejustification by the agency which initiated the report.

The Periodic Review operates on a decentralized basis with the Comptroller of the Army having responsibility for its overall supervision and coordination. Reports control officers in individual Department of the Army Headquarters staff agencies have primary responsibility for scheduling reports to be reviewed, analyzing results, and initiating corrective action.

Since the inception of the Periodic Review in 1954, major improvements in reporting and substantial savings have been accomplished. Some examples of the savings in Headquarters, Department of the Army reports during Fiscal Year 1957:

Action	Reports Control Symbol	Report Title	Estimated Annual Savings
Revision	MED-19(R1)	Preliminary Record of Continued Cases	\$700,000
Revision	CSGLD-456(R5)	Field Maintenance Program Performance	45,000
Revision	MED-41(R3)	Army Medical Service Activities Report	70,000
Rescission	TC-132	Review of Carriers' Service Relative to Shipment of Household Goods	24,500

A further benefit—one which cannot be measured accurately in man-hours or dollars—is awareness of the continuing need for reports improvement, enabling reports control officers at all echelons to do a more effective job.

ANOTHER procedure employed is the Installation Reporting Workload Survey. To date, 13 surveys have been conducted at zone of interior and oversea installations. These surveys are designed to identify, measure, and evaluate the total reporting workload at installation level; to isolate reporting problems; and to assemble the details of collection, recording, and processing of report data, in order to provide a basis for simplification and improvement of recurring reports.

Among the significant information derived from these surveys, it was found that, at all installations surveyed, only a few reports accounted for the bulk of the workload. On the average, 5 percent of the reports required 62 percent of the workload; 10 percent of the reports required 75 percent of the workload; and 20 percent of the reports required 87 percent of the

workload. On the other hand, 70 percent of the reports required only 7 percent of the workload. This would indicate that the most profitable results can be obtained by corrective action on a few recurring reports. These are now being given intensive study.

A THIRD and more recent effort of Headquarters, Department of the Army is a project to reevaluate the current system of reporting and analysis within the Department of the Army. This project is under jurisdiction of a Steering Group of general officers.*

The Steering Group prescribes and coordinates studies, and initiates appropriate action to refine and streamline the Army's reporting and analysis requirements in line with recent reorganizations and decentralization of authority. In brief, their studies are designed to "establish a reporting structure to

* Steering Group membership (as of February 1958) consists of: Major General J. B. Quill, Office of the Comptroller of the Army (Chairman); Major General J. F. Collins, Office of the Deputy Chief of Staff for Personnel; Brigadier General T. F. Bogart, Office of the Deputy Chief of Staff for Military Operations; Brigadier General N. D. Moore, Office of the Deputy Chief of Staff for Logistics; and Major General R. J. Wood, Office of the Chief of Research and Development.

Examples of Benefits Resulting from Installation Reporting Workload Surveys

Action	Reports Control Symbol	Title	Estimated Annual Savings
Rescission	CSGLD-637	Lumber Inventory and Requirements Report	\$160,000
Rescission	ENG-11	Insect and Rodent Control	75,000
Rescission	CSCAA-19	OSD, Navy and Marine Corps Transactions	30,000
Revision	QMG-119	Commissary Store Operating Cost Report	35,400
Revision	TC-104	General Transport Administrative Vehicle Utilization and Expense Data	500,000

provide the information needed to manage the Army."

Steering Group studies recognize that the frequently mentioned "reporting problem" is not the real problem at all, but is only the outward evidence of a number of underlying practices and conditions which require attention and resolution. These have been identified as the Army's organization, procedures, regulations, missions, and delegations of authority; and the informational requirements of higher authority and outside agencies.

When something is done about these underlying factors which generate, contribute to, or determine the nature of reporting requirements, there can be a real change in the reporting workload.

SEVERAL studies are now in process. First, a series of studies of reporting and analysis requirements of major commands is under way, with the first such survey conducted at Headquarters, Fourth U. S. Army in September 1957.

Second, studies are being conducted by various staff sections of Headquarters, Department of the Army to reappraise the reports they require, grouped together by functional areas (or "families"). When the information from these studies is combined with that obtained from studies at major commands, an insight will be provided into the real requirements for information.

In addition, the Comptroller of the Army has undertaken a number of related projects which will serve as sources of essential information for the Steering Group studies. Among these projects are:

(1) a study of the Class I Installation System,

(2) an engineering survey on the use of Automatic Data Processing Systems at large Class I installations,

(3) the development of techniques for the use of data developed by the Army Command Management System for review and analysis at installation level and successive higher levels of command, and

(4) the development of a uniform management structure for programming, budgeting, accounting, manpower control and reporting purposes.

ALL these efforts of the Army to establish a sound basis for eliminating non-essential reporting, and for reducing the reporting burden, recognize the need for good recurring reports as a means of communication so necessary to effective planning for, and directing of, the operations of the Department of the Army.

However, any immediate relief in the reporting workload should not be expected. The magnitude of the job does not lend itself to easy solutions; it requires that everyone concerned with reporting lend his efforts wholeheartedly to effect improvements.

The Army will always have recurring reports—they *are* needed—but they can and must be monitored and tailored constantly to insure that only essential data are provided to the proper Army agencies which have the responsibility and authority to take action on the basis of the information contained in those reports.

Professional competence, courage and devotion to duty are part and parcel of the



ARMY NURSE CORPS ROLE IN NATIONAL DEFENSE

Colonel Inez Haynes

THE Army Nurse Corps takes justifiable pride in its heritage. Through decades of progress in science and medicine, Army nursing has been noteworthy not only in periods of wartime defense but also in the preservation of troop health in peacetime.

Military nursing in the United States can be traced as far back as the War for Independence when General Washington's concern for his troops prompted him to request funds to employ nurses in a ratio of "one nurse to every ten patients." Interestingly, this ratio is still considered valid, some two hundred years later.

Nurses of the Revolutionary period were not professionally trained, and it was not until after the Civil War that the first schools of nursing were founded in this country. Thus, by the time of the Spanish-American War there were sufficient women, formally trained in the nursing arts, to be used with outstanding results in military hospitals.

Improved standards of patient care which become evident in military hospitals with the advent of professional nursing resulted in the establishment on 2 February 1901 of a Corps of 200 nurses as a component of the Army.

The early days were turbulent ones for Army nurses. From the time of its establishment until World War I, the mission and status of the Army Nurse Corps had not been defined. By the end of World War I, however, the Corps emerged with the status of its members more clearly defined, and with the mission to provide the nursing care essential to accomplishment of the mission of the Army Medical Service. These were the first major steps in the process which reached its culmination in 1947 when the Army Nurse Corps became a permanently commissioned Corps.

The contribution of the Army Nurse Corps during World War II and the Korean conflict is reflected in diminished mortality rates, compared with previous wars. This gain can be attributed, in part, to the presence of Army nurses in

COLONEL INEZ HAYNES, ANC, is Chief, Army Nurse Corps.

forward areas where heretofore they had never been permitted to serve. Frightened on occasion, uncomfortable most of the time, tired and fatigued—every Army nurse who participated nevertheless received her reward in the realization that by her presence she had assisted in saving some soldier's life. Many a wounded soldier's first conscious words were "—a nurse way up here! I guess maybe I'll make it yet." And by her very presence, many did "make it."

ARMY NURSES have been recognized for their dedicated services in war, receiving some of the country's most coveted decorations, as well as awards and citations from foreign governments. But the greatest award that any Army nurse ever receives is the satisfaction derived from "a job well done."

As the oldest of the women's services, the Corps has established an enviable record of distinguished performance in three wars. The Army Nurse Corps, however, is not willing to rest on its past prestige. It is actively participating in nursing research and is awakening other members of the profession to the significance of nuclear warfare and the resultant problems of mass casualties. By means of continuous research and in collaboration with national nursing organizations and other agencies, the Corps is in the vanguard of those seeking to improve the nursing care of patients, military and civilian.

Recently, within the Walter Reed Army Institute of Research, a Department of Nursing was organized to carry out research studies in all fields of nursing practice. This department—one of the very few in

the entire profession of nursing—is an excellent illustration of the part that nursing plays in advancing the Army Medical Service.

THE Corps today is confronted with the problem of attracting and retaining highly qualified young women in the military service. It is essential that present strength be maintained if soldiers and their families are to continue to receive high standards of care.

Recent studies and surveys reveal that marriage, lack of satisfactory living conditions, pursuit of additional education, or length and frequency of overseas tours are the major factors contributing to the high attrition rate in the Corps. Insofar as possible, a variety of steps have been taken to meet and solve those reasons for separation.

The married nurse without dependents under 18 years of age, for example, is encouraged to remain

One of the first Army Student Nurse Program graduates is sworn in as a second lieutenant.



on active duty, and every effort is made to have her assigned with or near her husband. Living conditions are being improved, and plans are underway to construct a pilot model apartment type quarters at Fort Knox, Kentucky. This type of housing will more nearly conform to quarters being made available to nurses in civilian life.

For those who desire to continue their education on off-duty time, assignments are so arranged that they are near a college or university. In this way the student loses minimal time or credits when a change of station is necessary. A Final Semester Plan is also available to Army Nurse Corps officers, both male and female. When such officers become eligible, they may be placed on temporary duty from their assigned stations to complete final requirements for a degree.

The problem of length and frequency of overseas tours has been partially resolved by the current policy of a two-year overseas tour for women of the Army Nurse Corps who are single or not accompanied by dependents. This has markedly improved morale and retention rates, and it is hoped that this policy will be continued. When the Army Nurse Corps is able to retain nurses in sufficient numbers needed to meet its actual requirements, then the frequency of overseas tours will also be reduced.

IN analyzing the problem of shortage of professional nurses in the Army Nurse Corps, it is necessary that one recognize that there exists an acute national shortage of professional nurses. Heretofore, adequate numbers of nurses regardless of their responsibilities have

generously volunteered their services in any disaster or emergency. However, it would be a serious fallacy, in view of the national shortage, to believe that in the event of future emergencies or the outbreak of war our need for Army nurses would be adequately met. Civilian requirements for medical care may very well parallel or exceed those of the military.

A recent release by the National Health Council revealed that there is an immediate nationwide requirement for 70,000 graduate nurses. It is also true that at the present time there are more registered professional nurses in this country than ever before. If this be true, why the shortage? Needless to say, population increase is an influencing factor, but more important is the progress being made in medical science.

Progress has brought complex methods of medication and treatment. As methods of diagnosis and treatment become more complex, it necessarily follows that the education and functions of the professional nurse also become more complex. Nurses today cannot confine themselves solely to administering a few simple medications and treatments to their patients, and otherwise seeing that the patients are made comfortable.

While these well-known duties still are of paramount importance, the nurse must care for the "total patient"—his physical as well as his psychological needs. However, due to complex medical and surgical procedures, nurses must delegate the performance of simpler procedures to the nonprofessional members of the nursing team. Successful progress of the medical sciences



Administering intravenous medication, as in this mobile hospital in Korea, demands training and skill.

will, in part, be influenced by the availability of professional nurses who can assist with complex procedures. This is true equally in civilian and military practice.

ANOTHER aspect of the national shortage of professional nurses which cannot be overlooked is its effect on the Ready Reserves of U. S. Army Reserve medical units. Despite the increased emphasis placed upon the role of the Army Nurse Corps Reserve, less than ten per cent of the Reserve nurse spaces are currently filled. Without sufficient numbers of professional nurses who are adequately trained, the mission of the Army Medical Service in time of war or other national emergency will be in jeopardy.

The Army nurse, as a member of the Reserve, has the same obligations and is afforded the same benefits as other officers of the Ready Reserve. In addition, she is provided with an opportunity for continuous professional development, and may apply for attendance at institutes and workshops available to nurses of the active Army. At

present, an Army Nurse Corps officer is assigned to Reserve Affairs, Office of The Surgeon General, to advise on matters concerning procurement and training of Reserve Army Nurse Corps officers. All nurses throughout the country are encouraged to participate in the Reserve as a responsibility of citizenship in national defense.

IN recognition of the shortage of professional nurses, the Department of the Army has given support and assistance to the Army Nurse Corps and the Army Medical Service in exploring the many facets leading to improved procurement programs. In addition, two programs have been initiated to provide assistance to nurses on a full-time study basis, *i.e.*, the Army Student Nurse Program and the Registered Nurse Student Program.

THE Army Student Nurse Program, the more recent of the two, has been exceptionally well received and the results thus far have been most gratifying. It provides an unusually attractive opportunity for student nurses of proven ability to undertake a full-time study course in their own school with Army financial assistance.

Young women enrolled in schools of nursing accredited by the National League for Nursing Accrediting Service are eligible to apply for this program at the end of their second year of training. Selected applicants enlist in the Women's Army Corps, with concurrent call to

An Army nurse adjusts traction on a soldier hospitalized with a broken leg.



active duty on a student status, for the purpose of participating in this program. Students remain at their own school of nursing until they have completed the prescribed course and can qualify for State licensure.

During this period, the student receives full pay and allowances of an enlisted Reservist on duty in the Women's Army Corps, except that where quarters and subsistence are provided by the school, the student receives only the base pay of her grade. Upon receipt of notification of State licensure, the young nurse is commissioned in the Army Nurse Corps Reserve for a period of two or three years, depending upon the time spent in training under the program.

THE Registered Nurse Student Program furnishes another unique educational opportunity for the young woman who has completed her basic preparation, and is enrolled in a college or university in a course leading to a bachelor's or master's degree in one of the various fields of nursing.

This program enables selected individuals who can complete the requirements for a bachelor's or master's degree within one calendar year to be appointed as commissioned officers in the Army Nurse Corps Reserve with concurrent call to active duty in order to participate in the program. They matriculate at the college or university of their choice and receive the pay and allowances of either a second or first lieutenant. After graduation,

they are assigned to an Army hospital for the remainder of a three-year tour of duty.

Students selected to participate in either of these programs must be eligible for appointment in the Regular Army, *i.e.*, with respect to age and physical qualifications. It is hoped that these young nurses will augment the Regular Army strength of the Corps

TO MAINTAIN the Active and Regular Army Nurse Corps strength there are programs for professional advancement, educational opportunities, and career incentives comparable with that provided for other officers of the Armed Forces. Actually the professional nurse electing a career in military nursing has certain advantage over her civilian counterpart.

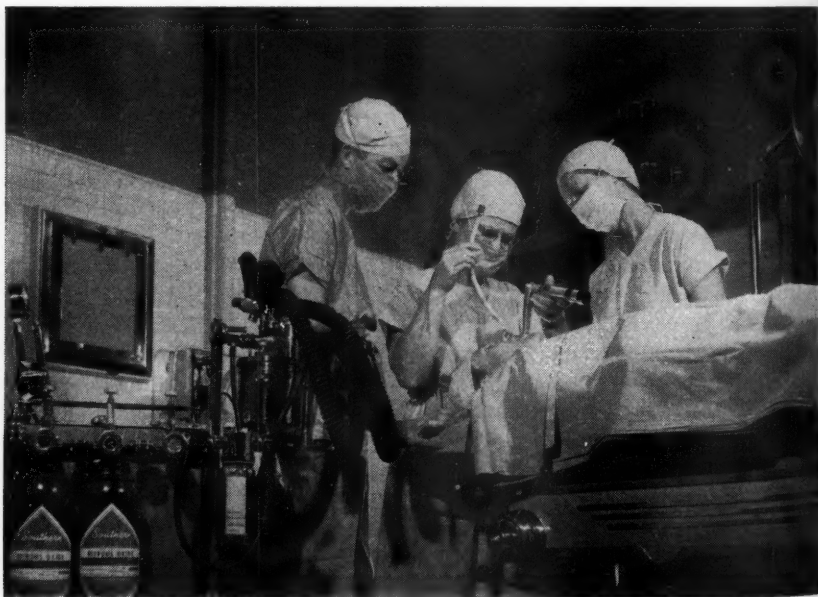
At the Army Medical Service School and at Army Medical Centers, courses are conducted in most of the specialized fields of nursing. Nurses, both Regular and Reserve, may attend courses in Advanced Operating Room Technique and Management; Anesthesia; Neuro-

psychiatric Nursing; Obstetrical Nursing; Nursing Administration, basic and advanced; and Hospital Administration. Selected Army nurses are afforded opportunities to attend civilian colleges and universities to complete their educational studies. Many have received their master's degree, and still others their doctorates. Recent studies indicate that the level of academic preparation of Regular Army nurses is almost three per cent higher than that of the profession as a whole.

Recent legislation—notably Public Law 85-155—has further increased the career incentives for nurses of the Armed Forces. Prior to this enactment, an Army Nurse Corps officer could not normally expect to attain rank higher than that of captain at the completion of twenty years' service. Under the provisions of the new law, a nurse who "fully qualifies" may now expect to retire after twenty years of

service in not less than the grade of major. This brings members of the Army Nurse Corps more in line with the promotional opportunities available to other officers of the Armed Forces.

DESPITE efforts to alleviate the shortage of professional nurses, it does not appear that the national, as well as the military, shortage will be resolved in the foreseeable future. True, this does present a critical problem, but in the meantime Army nurses, regardless of where assigned, will continue to serve their country, their Corps, and their profession in the same unselfish and dedicated manner that is traditional of the Army nurse. No group of women have ever given more generously of their time, their service, their skills, and of themselves than have members of the Army Nurse Corps. They can be depended upon to do so in the future



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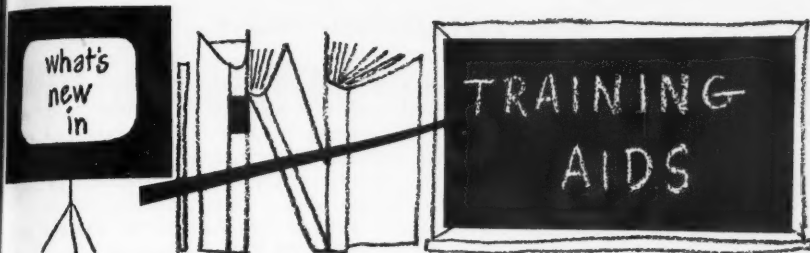
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Keep your organization current with the latest training materials by referring to this section in each issue.

TRAINING LITERATURE

While the following new literature will be published shortly, units are cautioned NOT to requisition copies until receipt of automatic initial distribution or the items are listed in DA Pamphlets 310-3 or 310-4.

Field Artillery Missile, REDSTONE. FM 6-() is designed to assist commanders in training the Redstone firing battery (TOE 6-635D) into an efficient, smooth-working, disciplined combat team.

Field Artillery Missile Group (Heavy). FM 6-() is a guide for the group commander, unit commanders within the group, and corps and Army artillery commanders in employment of the Redstone guided missile.

Radiological Recovery of Fixed Military Installations. TM 3-225 is an Army-Navy publication of technical information concerning operational recovery after a contaminating nuclear attack.

Revision. The following revision will be published:

TM 6-200, "Artillery Survey"—a revision of 1954 edition.

TRAINING AIDS

Training Films recently released include:

- TF 5-2217 "Explosives and Demolitions—Part I—Demolition of a Reinforced Concrete "T" Beam Bridge"
- TF 5-2465 "Guided Missile Equipment — NIKE — Door Cylinders, Removal"
- TF 9-2510 "Fundamentals of Ammunition Renovation"
- TF 9-2541 "Preparation of Vehicles for Deep Water Fording—Part I—Wheel Vehicles"
- TF 9-2542 "Preparation of Vehicles for Deep Water Fording—Part II—Track Vehicles"
- TF 17-2425 "Range Determination"

TF 44-2167 "Nike-Ajax Battery, Energizing and Deenergizing the Ground - Guidance Equipment — Part II — Target Tracking Radar"

TF 55-2308 "Helicopter Maintenance—Part I—Helicopter Power Plants"

MF 30-8633 "Armies of the World—The Soviet Army—Summer Training Cycle"

ARMY EXTENSION COURSES

The following subcourses have recently been published:

NEW SUBCOURSES

Signal Communications for Engineers 1. ENGR Subcourse 7, U. S. Army Engineer School. Signal communications for the Infantry Division Engineer Battalion to include familiarization with and use of signal orders and instructions, field message writing, communication security, capabilities and limitations of signal equipment authorized the Infantry Division Engineer Battalion, employment of radio and wire equipment in the Infantry Division Engineer Battalion.

Engineer Equipment 1. ENGR Subcourse 13, U. S. Army Engineer School. Army Maintenance System; operator preventive maintenance services; organizational preventive maintenance procedures; lubrication; care and maintenance of off-the-road-tires; characteristics and capabilities of engineer heavy construction equipment such as tractors, graders, cranes, rollers, air compressors with pneumatic tools, rock crushers, scrapers, earth augers, asphalt plants.

Chemical, Biological, and Radiological Warfare II. INF Subcourse 74, U. S. Army Infantry School. Familiarization with command and staff problems of CBR warfare at regimental level through emphasis on protective problems, capabilities and limitations of CBR

agents as weapons of war; tactical employment and integration with the regimental weapons system.

Medical Service in a Theater of Operations. MED Subcourse 2, U. S. Army Medical Service School. An introduction to the organization and mission of Army Medical Service; organization, functions and employment of field army and communications zone medical units and medical units organic to infantry, armored and airborne divisions; duties and functions of division surgeon, and his relationship to the commander and division general and special staff.

Military Sanitation—Intestinal and Respiratory Diseases. MED Subcourse 9, U. S. Army Medical Service School. Respiratory diseases, their impact and control; epidemiology and control of intestinal, arthropod-borne, venereal, and miscellaneous diseases and infections of medico-military importance. Immunization.

Military Law. MED Subcourse 33, U. S. Army Medical Service School. Disposition of suspected offenders, including disposition other than by court-martial; evidentiary matters; preparation of charges; Geneva Conventions; and Federal Tort Claims Act.

Plant Planning and Maintenance II. MED Subcourse 111, U. S. Army Medical Service School. Electrical facilities, ventilation and air conditioning, custodial management, and noise control in the hospital.

Unit Movements, CONUS. TRANS Subcourse 71, U. S. Army Transportation School. Troop movement procedure within continental United States; actions taken during training, alert and movement phases of a troop movement; preparation and application of rail movement table, train consist table, entraining table, and individual train-loading plan; duties and responsibilities of the troop movement commander.

Motor Transport Service in Theaters of Operations. TRANS Subcourse 76, U. S. Army Transportation School. Staffs and techniques; principles of employment; classes and types of operations; methods of operation; general administrative responsibilities.

Movement of Household Goods and Personal Baggage. TRANS Subcourse 77, U. S. Army Transportation School. Use of Joint Travel Regulations and speci-

fic Army and Special Regulations dealing with movement of household goods and personal baggage; interpretation of provision authorizations, allowances, documentation; procedures, methods of shipment, excess costs, and claims.

Vehicle Operations in Desert and Arctic. TRANS Subcourse 78, U. S. Army Transportation School. Seasonal conditions in desert, arctic, and subarctic regions; their effect on men, vehicles, and materiel; operational techniques; and specialist training requirements.

REVISED SUBCOURSES

Storage, Shipment, and Disposal of Chemical Agents and Hazardous Chemicals I. CML Subcourse 55, U. S. Army Chemical Corps School. Classification of Chemical Corps agents, hazardous chemicals, and chemical munitions for storage and shipment; safety measures and equipment handling, shipment and storage of chemical agents and hazardous chemicals; depot layout and storage procedures.

Personnel Administration II. INF Subcourse 53, U. S. Army Infantry School. Personnel management and administration to include principles of personnel management, duties and responsibilities of the regimental S1; strength; replacements; discipline, law and order; administration of military justice; prisoners of war; burials and graves registration; morale and personnel services; civil affairs; military government; command post organization and displacement; personnel procedures; and officer efficiency reports.

Troop Movement and Bivouac III. INF Subcourse 62, U. S. Army Infantry School. March planning for the infantry regiment by foot, motor, and by shuttling to include time and space factors, warning orders, route and site reconnaissance; formations; column organization and control.

Joint Air-Ground Operations. INF Subcourse 66, U. S. Army Infantry School. Employment of the tactical air force, to include relationship of air force as a whole to ground forces, Air-Ground liaison system and its operation to include forward controller system.

Dental Records and Reports. MED Subcourse 56, U. S. Army Medical Service School. Provides the Army Dental Corps and other Army Medical Service officers with working knowledge of dental service administration.

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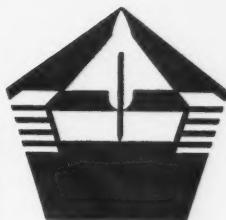
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PARAGRAPHS From the Pentagon and the Field



Key officers and technicians are currently receiving instruction preparatory to beginning training of the first Nike-Hercules missile battalion at the Air Defense Center, Fort Bliss, Texas. The Hercules program will involve conversion of existing Nike-Ajax units, as well as activation of new units. Greater training activity is scheduled than during the Nike-Ajax program, with a peak load of about 10,000 expected compared with a student load of about 5,000 at present. Instruction on the Hercules will be given concurrently with that for Ajax, which it will replace with greater capability in range, altitude, speed and killing potential.



To be modeled after the prototype plant now in operation at Fort Belvoir, Virginia, the first operating field model nuclear plant will be built by the Corps of Engineers at Fort Greely, Alaska. The plant will generate both electricity and heat for the post.



The Army's third operational Redstone unit has been activated at Fort Sill, Oklahoma. Known as the 2d Battalion, 333d Artillery, it is the first step in the formation of another Field Artillery Missile Group (Heavy) employing the Redstone missile. The first Redstone group was activated at Redstone Arsenal, Huntsville, Alabama, in July 1957; the second at Fort Sill on 1 October 1957.



Development of combat surveillance methods—designed to maintain continuous watch over a battle area at all times under any weather conditions—is provided for in a two-year contract recently awarded to the Cornell Aeronautical Laboratory, Buffalo, New York, by Army Signal Corps. Objective is to im-

prove systems by radar, infrared, sonic, meteorological, drone reconnaissance, photographic and televisual means. The Laboratory will undertake the three-fold task of evaluating existing major programs, reviewing tactics and techniques, and recommending new policies and practices to the U. S. Army Combat Surveillance Agency.



New world helicopter altitude records set by Captain James E. Bowman, assigned to the U. S. Army Aviation Board at Fort Rucker, Alabama, now are being evaluated by the Federation Aeronautique Internationale, world-governing body for sporting aviation. Captain Bowman, who was awarded the Distinguished Flying Cross for his feat, set altitude records of 30,335 feet in two weight categories and 28,200 feet in a third helicopter weight class. He flew an Army YH-41 "Seneca" helicopter on the flights.



Designed to reduce fire hazards, a new spark and flame arresting muffler has been developed for use on trucks by the Corps of Engineers Research and Development Laboratories, Fort Belvoir, Virginia. It is designed primarily for gasoline engine powered fork-lift trucks used in congested and highly combustible areas. The new device was built by the Fluor Corporation, Whittier, California.



A new photo-reconnaissance system employing a small camera and automatic flare ejector has been perfected to give combat commanders accurate low-level aerial photographs of enemy areas during darkness. The small, rugged, lightweight camera, which has no shutter in the ordinary sense, may be used in piloted or

drone aircraft. It makes a series of pictures which overlap each other on a continuously moving roll of film. A terrain strip thus can be photographed by a sequence of extremely rapid flashes in a matter of seconds.

Perfect coordination between position, speed of film and peak of the flash from a series of 14 cartridges is secured by a stepping switch actuated by the film transport mechanism. The photoflash cartridge ejector was designed by Universal Match Corporation, St. Louis, Missouri; the KA-28 camera was developed at the Signal Engineering Laboratories in conjunction with the Fairchild Camera and Instrument Corporation, Syosset, N.Y.



A contract has been awarded for production of the Army's recently standardized plastic assault boat designed for river and other water obstacle crossings. Lightweight, capable of carrying 15 men with field equipment and weapons, the

fiberglass reinforced plastic boat—developed by the Engineer Research and Development Laboratories, Fort Belvoir, Virginia—will be produced by Correct Craft Incorporated, Pine Castle, Florida. The boat is designed primarily for hand paddling, but an outboard motor can be attached.



An "electronic weatherman" has been developed by the Signal Corps to spot high-altitude indications of bad weather, and to trace high velocity winds such as the jet stream.

Computers of this system work together with a light weather station, called a radiosonde, carried aloft by a rising balloon. The device sends back coded radio signals which when fed into the "brain" are translated on paper as humidity, temperature and pressure readings. Another computer calculates the wind speeds. The system can track a balloon as high as 24 miles and as far away as 200 miles, twice the effective range of previous equipment.

Official Notes

SPORTS COMPETITIONS. AR 28-50 outline policy and procedures applicable to participation of military personnel in various international sports competitions.

TRAVEL REIMBURSEMENT. AR 35-3095 prescribe methods of reimbursing military and civilian personnel for expenses incurred for performing necessary official travel within and adjacent to the permanent duty station.

CODE OF CONDUCT. AR 350-30 provide guidance for indoctrination and training of Army personnel in support of the Code of Conduct.

REGULAR ARMY APPOINTMENTS. AR 601-107 set forth statutory authority, general policy, eligibility requirements and administrative procedures for appointing distinguished military graduates, senior division, Reserve Officers' Training Corps, as commissioned officers in the Regular Army.

SAFETY AWARDS. AR 385-220 establish the Safety Awards Program and set forth procedures by which the Department of the Army takes official cognizance for outstanding achievement in the accident prevention program.

TRANSPORTATION MOVEMENTS. AR 55-26 outline policy, organization, and procedures for use within headquarters of Theater Army Forces and similar and subordinate commands, to insure efficient utilization of transportation resources.

OFFICER APPOINTMENT. AR 601-100 set forth the statutory authority, general policy, eligibility requirements, special criteria, administrative procedures, and method of submission of applications for appointment in the Regular Army.

SPECIAL FORCES. AR 601-245 prescribe qualifications and procedures for enlistment or reenlistment of men in the Regular Army for initial assignment to special forces duty.

"Explorer" Earth Satellite Launched by Army Jupiter-C

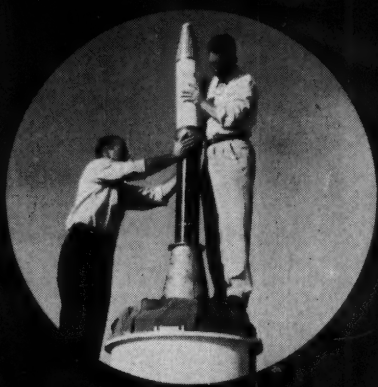
THE JUPITER-C rocket which carried the Army's earth satellite into its epoch-making orbit was jointly developed by the Army Ballistic Missile Agency (ABMA), Huntsville, Alabama, and the Jet Propulsion Laboratory (JPL) of California Institute of Technology.

Designed originally for study of aerodynamic problems involved when a ballistic missile re-enters the relatively dense earth atmosphere, the Jupiter-C had successfully carried into outer space the nose cone displayed by the President in his nation-wide TV address last fall. Subsequently it was modified to launch the earth satellite.

Measuring approximately 70 feet, the composite missile consists of a liquid-propellant rocket supporting three booster systems powered by a solid propellant. During ascent, the main power plant is expended, separates and falls back to earth. This first stage powers the additional stages carrying the payload satellite to the prescribed distance from the earth. Successive stages increase the speed for orbiting, but do not send the satellite to a greater height. The upper stages are spin-stabilized, much like a rifle bullet, by means of electric motors. The final stage rocket—weighing 12.67 pounds after burnout—and the satellite proper were designed to remain together and circle the earth as one unit.

A PRODUCT of science, industry and Army cooperation, the Jupiter-C's first stage power plant—a modified Redstone engine—was made by Rocketdyne Division of North American Aviation Company. The ballistic casing for the main stage was produced by ABMA; guidance and control components by Ford Instrument Company of Garden City, New York; the launcher base by Reynolds Metals Company of Sheffield, Alabama; and the upper stages high-speed assembly by JPL, which also provided temperature sensors and radio transmitters and assembled the satellite. The nose cone was produced by Lodge and Shipley of Cincinnati, Ohio.

*(For view of Jupiter-C and Explorer satellite,
see back cover.)*



THE U. S. ARMY—A KEY TO PEACE